

THE UNIVERSITY
OF ILLINOIS
LIBRARY

580.3
Sm5
cop. 2

~~580.3~~

The person charging this material is responsible for its return to the library from which it was withdrawn on or before the **Latest Date** stamped below.

Theft, mutilation, and underlining of books are reasons for disciplinary action and may result in dismissal from the University.

To renew call Telephone Center, 333-8400

UNIVERSITY OF ILLINOIS LIBRARY AT URBANA-CHAMPAIGN

AUG 06 1986

JUN 02 1993

L161—O-1096

AGRICULTURAL
EXPERIMENT STATION.

DEC 1 1883

UNIVERSITY OF ILLINOIS.

25092
507
300

DICTIONARY OF POPULAR NAMES
OF ECONOMIC PLANTS



A
DICTIONARY
of

Popular Names of the Plants which furnish the
Natural and Acquired Wants of Man, in all
matters of Domestic and General Economy

Their History, Products, & Uses

By JOHN SMITH, A.L.S.

AUTHOR OF 'HISTORIA FILICUM,' 'HISTORY OF BIBLE PLANTS,' ETC. ETC.

LONDON
Macmillan and Co.

1882

580.3
S in
P 1/5

a. c.

s. c. Plants - application & use of

s. c. Plant products -

s. c. Botany economic.

Ref. c. Product of plants

see Plant products

580.3

Sm 5

cop. 2

P R E F A C E.

IN submitting this work to the notice of the public, I deem it proper to explain the sources from which I have acquired the knowledge of the subjects of which it treats. The greater part has been obtained during an official connection of more than forty years with the Royal Gardens, Kew, which afforded me the opportunity of studying and becoming practically acquainted with the largest collection of living plants, exotic and native, ever brought together, not only as regards their cultivation and classification, but also with their properties and uses, as known both by their scientific and popular names. My knowledge of the latter has been greatly increased by correspondence with collectors and curators of Botanic Gardens abroad, and also through my having taken an active part in assisting the late Sir W. Hooker to establish and bring together the vast collection of specimens of vegetable products which, begun in 1846, now occupies three separate large buildings under the name of the Kew Museum of Economic Botany. The object of this collection is to show the practical application of the use of plants, by which we learn the source of the numerous products furnished by the vegetable kingdom made use of by man in all matters of domestic and general economy.

1173. a. Δ.

It is here necessary to state that my son, the late Alexander Smith, having taken much interest in arranging the first specimens in the Museum, received, in time, the appointment of curator; from this office he was in 1858 removed on account of ill health.

He early entertained the idea of writing a work to be entitled *Economic and Commercial Botany*; with that view he commenced taking notes of all matters relating to the products and uses of plants; and his health having improved, he made frequent visits to the library of the British Museum, which enabled him greatly to increase the number of his notes. At the time of his death in 1865 his arranged notes occupied thirty octavo volumes, besides manuscripts prepared for the press.

In order that his labours should not be altogether lost, I selected sufficient matter to form a volume of 546 pages (published 1871), entitled *Domestic Botany*, consisting of two parts—the first being an introduction to the study of botany, written in as plain language as the subject permitted, and the second a systematic arrangement of the families of plants, with a brief notice of the character, nature, and number of species of each family, followed by the popular and botanical names of the principal species yielding products useful to man. Learning that the latter part of the book was most appreciated, I was led to undertake a revision of the work, and in order to save an index, to arrange the subjects in alphabetical order, adopting the English and vernacular names by which plants and their products are known in their respective countries. There being, however, no written nomenclature of such names, it becomes necessary for the correct identification of the

plants, to give their botanical names, and the name of the natural family to which they belong, and by giving the common name of the latter, with a brief description of the species, I have made it possible for the uninitiated in botany to form some idea of the nature of the plant about which he is reading. And in order that the book may be also useful to the scientific botanist, I have given a list of the genera noticed in the work, which number 1163, under which are noticed about 1600 subjects.

With regard to the natural families adopted by me, it is necessary to state that botanists differ widely in the characters of families, some placing many genera under one family which other botanists separate under two or more. It is here only necessary to notice the two latest general arrangements, the first being *The Vegetable Kingdom* of Dr. Lindley, published in 1853, in which he characterises 303 families; the second, the *Genera Plantarum* of Bentham and Hooker, which commenced being published in 1862, and is not yet completed, in which two, three, and four of Lindley's families are united under one—for example, the Apple family (Pomaceæ), with the Plum family (Drupaceæ), are considered as tribes of the Rose family (Rosaceæ). The reasons for such unions may be readily understood by scientific botanists; but for the sake of simplicity, and not to perplex the unbotanical reader with unnecessary botanical words, I have, as hitherto, adopted the families as characterised by Lindley. It is said that there are nearly 200,000 species of plants now known to botanists; of that number only a moiety are requisite to furnish man

with all his natural and acquired wants, which vary according to climate. Such plants are generally termed economical, which word must be accepted in its widest sense—that is, not only as including plants that furnish food, medicine, and clothing, but also those that furnish materials for all mechanical and artificer's work, as also ornamental and curious plants cultivated in gardens or kept in museums, which to obtain forms an important part of the trade and commerce with all countries. With regard to the adoption of common, or what are termed popular, names, it is unfortunate that many of them are vulgar and undignified, and derogatory to the useful, pretty, and curious plants which they designate, such as Aaron's Beard, Jove's Beard, Job's Tears, Jacob's Ladder, Venus Navelwort, Venus Looking-glass, Devil-in-a-bush, Fresh-water Soldier, Mourning Widow, Adam's Needle, and Old Man. It would be well if such names could be discarded, but as they have been long familiar, we are left no alternative but to adopt them. In many cases the scientific names of plants have also become familiar—for instance, *Geranium*, *Pelargonium*, *Hydrangea*, *Calceolaria*, *Chrysanthemum*, *Amaranthus*, *Rhododendron*, *Azalea*, *Fuchsia*, and many others, are now as freely spoken as if they were original words of our mother-tongue; such being the case, I have in the following pages adopted the scientific name in cases having no popular names.

With regard to the selection of the subjects which form the work, many more might be given, such as fancy plants of taste and reputed medical plants of which the virtues of many are fanciful; but to have done so would have enlarged the book beyond the size

DICTIONARY OF POPULAR NAMES

OF

ECONOMIC PLANTS.

Abaca, a name in the Philippine Islands for the fibre of *Musa textilis*, known as Manilla Hemp. (*See* Hemp.)

Abele, the Dutch name for the White Poplar. (*See* Poplar.)

Absinthe, an intoxicating liquor made from *Artemisia absinthium*, an herbaceous plant of the Composite family (Compositæ), native of this country and Europe generally, familiarly known by the name of Wormwood ; it is common in Switzerland. A bitter extract is obtained from this species as well as from *A. judaicum*, called Absinthe. Of this liquor millions of gallons are yearly sent to France ; it is also largely manufactured in France, and is drunk in large quantities by the French people. It has an exhilarating effect, but its habitual use brings on gradual diminution of the intellectual faculties, ending in delirium and death. The French Government have found it necessary to prohibit its use in the army and navy. In the Lamentations of Jeremiah (chap. iii. verse 15) we read, "He hath made me drunken with wormwood ;" if the rendering of these words is accepted as written, we are led to conclude that a similar liquor was in use in the time of Jeremiah.

Acacia, the name of an extensive genus of trees and shrubs of the Mimosa section of the Bean family (Leguminosæ), varying in habit from furze-like shrubs to lofty trees. They are widely distributed throughout the tropical and sub-tropical regions of both hemispheres. Their leaves are normally com-

pound winged, but in the greater number of the Australian species the true leaves are suppressed, the foot-stalks performing the function of the leaves (and termed Phyllodeæ), in some cases being broad, of various forms, or long and linear, spiny or heath-like. In some cases the true leaves are produced on the apex of the broad forms. The flowers are produced in compact globose heads or spikes, of various colours, generally white, pink, or yellow, the latter being the predominant colour in the Australian species. Their seed pods vary from simple and straight to horn-like, or curved, or twisted like a screw. As may be expected in such an extensive and varied genus, their uses are manifold. In India the genus is represented by about eighteen species of trees of various sizes and quality of timber, of which those of special interest are noticed under their respective local names, or of their products. (See, for example, Gum Arabic, Algaroba, etc.) They are widely spread throughout India, some attaining the height of 60, 80, and 100 feet, especially in the forests of Pegu and Prome. In Western Asia and Africa the genus is represented by gum-yielding species, as *A. arabica*, *A. caffra*, *A. capense*, *A. giraffæ*, *A. horrida*, *A. robusta*, *A. Senegal*, and *A. Seyal*, most of which are small-sized thorny trees of forbidding aspect occupying vast tracts of desert country. Various species of Acacia are also common throughout the West Indies, tropical America, and the islands of the Indian Ocean and Pacific, chiefly valued for their timber. With regard to the Australian species, about 300 are recorded, of which (a few years ago) 96 formed part of the Australian collection at Kew. They vary in habit from furze and heath-like shrubs to trees 50 to 60 feet in height. In the greater number of species, as above stated, the true leaves are suppressed, the principal ones with true leaves being *A. dealbata*, *A. decurrens*, *A. elata*, *A. floribunda*, *A. lophantha*, and *A. mollissima*, all beautiful and hard-wooded trees. They are, however, fast disappearing from their native haunts, whole districts being cleared for the sake of their bark, of which ship-loads are being annually imported to this country for the use

of the tanner. In South Europe and Western Syria the genus is represented by *A. Julibrissin* and *A. Farnesiana*, small trees with compound winged leaves; the first is said to extend eastward as far as China; it was introduced to Kew in 1745, and is perfectly hardy, three original plants having withstood the cold of January 1838, and producing heads of pink flowers yearly. *A. Farnesiana* is a small tree, with compound winged leaves, and globose heads of yellow, highly odoriferous flowers. There is much uncertainty as to the native country of this tree; in *Hortus Kewensis* it is said to be a native of San Domingo, and introduced into Europe by John Tradescant in 1656; it, however, appears to have been cultivated at Rome earlier than the above date, for it is noticed in a book published at Rome in 1625, entitled *Albini Hort. Farnesiana*; and about 1763-65, Linnæus, in *Hort. Upsalensis*, described and named it *Mimosa Farnesiana*, which was afterwards, by Willdenow (1805), placed in his genus *Acacia*. The tree is now common in the South of Europe, both wild and cultivated. Another remarkable point in the character of this plant is that it grows abundantly in the valley of the Dead Sea, and there it is covered with the parasite (*Loranthus acaciæ*), which has beautiful scarlet flowers in such abundance as at a distance to give to the trees the appearance of being on fire. In Italy its sweet-scented flowers are mixed with melted fat or olive oil, which becomes impregnated with their odour, and constitutes the fine pomade called Cassie. The plant is also largely cultivated on the flower-farms at Grasse and Cannes for perfumery purposes generally.

Acacia, False. (*See* Locust Trees.)

Acanthus, Spiny (*Acanthus spinosus*), a strong-growing perennial herb of the Acanthus family (Acanthaceæ), native of Italy. Recorded to have been introduced to this country in 1629. It has large, jagged, spiny leaves, a foot or more in length, which are said to have furnished Calimanthus with the model for the capital of the column of the Corinthian order of architecture.

Achocon, a name in Peru for *Leonia glycyarpa*. A large tree of the Violet family (Violaceæ), native of Peru. It has

alternate, oblong, acuminate, coriaceous leaves, and loose panicles of yellow flowers. Its fruit is the size of a peach, rough yellow, and filled with sweet soft pulp of the same colour. It is held in much esteem by the Peruvians.

Ach-root, a name in India for the root of *Morinda tinctoria*, a small tree of the Cinchona family (Rubiaceæ). Used for dyeing.

Aconite, a common name for the species of *Aconitum*, a large genus of perennial herbs of the Buttercup family (Ranunculaceæ), with smooth, palmate, long-stalked leaves. Flowers in spikes, calyx coloured, the shape of a helmet, containing five or more amorphous petals, and three ovaries, which become many-seeded follicles. Principally natives of Europe and Northern Asia. About a dozen species have been introduced and cultivated in gardens for their showy flowers, the most common being *A. Napellus*, familiarly known as Monk's-hood and Wolf's-bane. Its showy blue flowers make it a favourite in cottage gardens, but it and its allies are poisonous in the highest degree, accidents having occurred through eating the leaves for parsley, and death having frequently occurred from using the roots in place of horse-radish. This can only happen when the stalks and leaves have decayed, the two plants being totally unlike one another, and the roots are very dissimilar; the mistakes have generally been caused through ignorance in digging up the roots of Aconite instead of horse-radish. Much might be done to prevent such mistakes by exhibiting in schoolrooms the figures of the two plants, and the roots, their nature being explained by the teacher. The chemical alkaloid called Aconitine is obtained from the roots of this plant; it possesses all the virulent poisonous properties of the plant in a tenfold degree. *A. ferox* is similar in habit to the preceding, native of Nepal and some parts of the Himalayas. It is considered to exceed the above in virulence, and is called by the natives Bish or Bikh. They employ it to poison their arrows for shooting tigers and other wild beasts, the least wound causing certain death; it is considered the most formidable poison in India. Other allied species, natives of the Himalaya, are likewise strong

poisons, and the roots are also known as Bikh. *A. lycotonum*, yellow-flowered Wolf's-bane, a common plant in the North of Europe, is also poisonous. Linnaeus, in his *History of Lapland*, says: "All over the country through which I passed this day *A. lycotonum* was as common as heath; as it is not eaten by cattle it increases abundantly."

Adam's Apple, a fanciful name given to varieties of the fruit of the Lime, belonging to the Orange family.

Adam's Needle, a common name for the different species of *Yucca*, a genus of the Lily family (Liliaceæ), native of Mexico, Southern United States, and other parts of America. Some species are stemless, while *Y. gloriosa* and others have palmid stems, which under favourable conditions in this country attain the height of 4 to 6 feet, and 6 or more inches in diameter. They are often branched, each branch being terminated by a tuft of lanceolate or sword-shaped leaves, from which rises a panicle 2 to 3 feet high, bearing large pendulous white flowers. All the species contain a large quantity of fibre in their leaves which is extensively used in the countries where they are abundant. In Florida *Y. filamentosa* is called Bear Grass. It occupies extensive tracts of country; its fibre is strong, and used as a substitute for hemp.

Adder's Tongue, a common name for *Ophioglossum vulgatum*, a small one-leaved perennial herb of the Fern alliance, native of this country, growing on moist banks and meadows. Its leaves (fronds) are mucilaginous, and are used in the preparation of salves.

Agallocha, a name in India for *Excoecaria Agallochum*, a small tree of the Spurge family (Euphorbiaceæ), native of India, generally found growing near the sea, abundant on the Sunderbunds of the Ganges. Its milky juice is very acrid, blisters the skin, and is much dreaded by woodcutters. The wood is used for making charcoal, but the smoke is injurious to the eyes. It is also a native of some of the Polynesian Islands, where it is as much dreaded by the natives as the manchineal of America. In Fiji it is employed for the cure of leprosy, its

mode of application being very singular. The body of the patient is first rubbed with green leaves ; he is then placed in a small room and bound hand and foot, when a small fire is made of pieces of the wood of this tree, from which rises a thick smoke ; the patient is suspended over this fire, and remains for some hours in the midst of the poisonous smoke and under the most agonising torture, often fainting. When thoroughly smoked, he is removed, and the slime is scraped from his body ; he is then scarified and left to await the result. In some cases he is cured, but frequently the patient dies under the ordeal.

Agallocha is also a name in India for Eagle-wood (which see).

Agar-agar. (*See* Ceylon Moss.)

Agaricus, the name of an extensive genus of the Fungi family, of which the common mushroom is the type (which see).

Agave, the name of an extensive genus of the Narcissus family (Amaryllidaceæ), represented by the well-known plant called American Aloe (which see).

Agave, Soap (*A. saponaria*), native of Mexico. Its roots are saponaceous and used by the Mexicans as a substitute for soap.

Agrimony (*Agrimonia Eupatoria*), a strong-growing perennial of the Rose family (Rosaceæ), native of this country, generally growing in meadows and on the margins of fields. It is a powerful astringent, and was formerly used by herb doctors, and even at the present day is prescribed by some practitioners.

Ailanto, the Chinese name of *Ailanthus glandulosa*, translated "Tree of Heaven," a tree of the Quassia family (Simarubaceæ), native of China, introduced to Kew about 1751. At the time the original Botanic Garden at Kew was broken up, two trees, about a hundred years old, had attained the height of 60 or 70 feet. It is a large, spreading-headed, branching tree, and when in leaf in summer is highly ornamental, and in France and Italy it is much planted as a shade for public walks. It has lately come into special notice on account of a species of silkworm feeding on its leaves, and experiments have shown that it might be turned to profitable advantage in this country. Its wood has a beautiful yellow grain, and is used by cabinet-

makers. Allied to the preceding is *A. malabaricus*, a tree common in the forests of Cochin and Travancore. It yields a resinous exudation, called Mutty Pal, which is used as incense.

Air Plants, a common name applied to plants growing on trees, chiefly applied to many species of *Aroids*, *Bromeliads*, and *Orchids*.

Ajowan, a name in India for the seeds of *Carum* (*Ptychotis*) *ajowan*. An annual plant of the Carrot family (Umbelliferae), with erect forking stem and few leaves, the lower ones being cut into narrow segments. Its flowers are produced in small umbels, consisting of only a few rays. It is cultivated in Bengal for its seeds (fruit), which are small like caraways, and remarkable for their strong smell of thyme, and are common in the Indian bazaars. They are used both for culinary and medical purposes, and have lately come into special notice in this country and in Germany for the manufacture of *Thymol*, enormous quantities of which are now made and used as an antiseptic.

Aka, a New Zealand name for *Metrosideros scandens*, a climbing epiphyte of the Myrtle family (Myrtaceae). It completely envelops the tree on which it grows, which ultimately dies, and the wood decays. The epiphyte remaining forms a hollow case.

Akee, the native name for the fruit of *Blighia sapida*, a tree of the Soapberry family (Sapindaceae), native of Western tropical Africa, early introduced into the West Indies, and now spread into other tropical countries. It is common in Jamaica, and forms a handsome tree 30 feet in height, having large, broad-winged leaves, somewhat rough. Flowers produced in racemes from the axis of the leaves. The fruit is a three-sided valved capsule of a reddish colour, about three inches in length, containing a yellowish pulpy aril, in which are embedded three black seeds. In its raw state it is considered poisonous, but cooking makes it wholesome. During the season large quantities are brought to Kingston market (Jamaica). It is liked by both Europeans and natives. It was introduced to this country in 1793, and has fruited in the hothouses at Kew.

Alder (*Alnus glutinosa*), a tree of the Birch family (Betulaceæ), common in this country and throughout Europe. It has soft wood, which soon decays, but is of great durability when placed underground or in water. In some places it is largely grown for making charcoal, which is used in the preparation of inferior kinds of gunpowder. Bowls and other domestic utensils are made of the wood.

Alerse, a name in Chili for *Libocedrus tetragona*, a large tree of the Cypress tribe of Coniferæ, native of Chili. It is highly valued for its timber, and forms an important article of export trade from Chili. Its grain is so straight that it can be split into boards that look as smooth as though they had been planed.

Alexanders (*Smyrniun Olusatrum*), a biennial of the Carrot and Parsnip family (Umbelliferæ), cultivated for its leaf-stalks, which have a pleasant aromatic flavour, and at one time were blanched and used instead of celery. The leaves were likewise employed in flavouring soups. It is now, however, seldom if ever cultivated, celery having taken its place.

Alexandrian Laurel. (See Butcher's broom.)

Algaroba, the Spanish name for the pods of several species of *Prosopis*, a genus allied to Acacia of the Bean family (Leguminosæ), consisting of hard-wooded thorny trees seldom exceeding 30 feet in height, occupying extensive tracts in the western countries of America from Peru to Colorado on the north. They may be considered to represent the *Acacia Seyal*, *A. nilotica*, and *A. arabica* of Western Asia and Africa. Their pods contain a sweet mucilage of the same nature as the carob tree. In Peru *P. dulcis*—there called Paray (also common in Mexico)—with *P. horridus*, occupies extensive tracts called "pastures," a name consequent on the pods being extensively used as food for cattle. The pods of *P. dulcis* are described as from 20 to 24 inches long, enclosing black seeds embedded in white pulp, which is sweet and is eaten by the natives. This species has been by the Spaniards introduced to the Philippine Islands, and thence to India. It is extensively planted in the Madras Presidency by the sides of railways, and there called

Manilla tamarinds. *Prosopis glandulosa* is an allied species; native of Texas, Colorado, and other parts of the Western States, where it occupies vast tracts of country, and is known by the natives as the Mesquit tree. It attains the height of 30 feet, and a diameter of 4 to 10 inches. Its wood is very hard and durable, and well adapted for posts and other open-air purposes. It yields a gum nearly equal to gum arabic, which may be collected in great abundance. It becomes white and semi-transparent on exposure to the light. The pod is long, of the form of the common bean, and contains a sweet mucilage, which by fermentation and boiling furnishes a not unpleasant drink. A meal is prepared by pounding the seeds or beans, which, mixed with water, is made into a paste, then dried in the sun, when it is used as an article of food, and will keep for a considerable time. Another species, *P. pubescens*, is called the Screw Bean, on account of its twisted pods, which also contain a sweet pulp so full of saccharine matter that by boiling a kind of molasses is obtained. The pods of these trees form an important article of food to the native Indians in the places where they grow, and are eagerly devoured by cattle. Consequent on the yearly prairie fires, vast destruction has befallen forests of these trees, especially west of the Colorado.

Algum, Tree of Scripture. (*See* Sandal-wood.)

Alkanet (*Anchusa tinctoria*), a strong-growing perennial of the Borage family (Boraginaceæ), with pretty blue flowers, native of the South of Europe, and cultivated in many parts for its roots, which are imported from France and Germany. They yield a red dye, and other colours are obtained by different mordants. The red colour of the roots is readily extracted by alcohol.

All-heal. (*See* Valerian.)

Alligator Apple, a name in the West Indies for the fruit of *Anona palustris*, a small tree of the Custard Apple family (Anonaceæ). It is common in low lands near the sea, in many of the islands near the Continent, and in tropical America. Its fruit is not palatable to man, but alligators are extremely fond of it, hence its name.

Alligator Pear, a name in the West Indies for *Persea gratissima*, a small tree of the Laurel family (Lauraceæ). A native of the West Indies and tropical America, attaining the height of 20 or more feet. It produces an oblong, pulpy fruit, about the size of a large pear. It is now common in the Mauritius and other hot countries, where, as well as in the West Indies, it is much esteemed as a dessert fruit.

Allmug, Tree of Scripture. (See Sandal-wood.)

Allspice (*Pimenta officinalis*), a small, bushy tree of the Myrtle family (Myrtaceæ), extensively cultivated in Jamaica for the sake of its fruit. On the north side of the island Pimento walks are found on a large scale, occupying many acres. The fruits, which are of the size of currants, are gathered before they are quite ripe, and in drying become of a brownish-black colour; they are then ready for the market. They partake of the smell and flavour of cinnamon, clove, and nutmeg. They are used as a spice for flavouring food, and are also used as a stimulant, and an oil is obtained by distillation equal to oil of cloves. In Jamaica the berries are highly spoken of as a substitute for tobacco, being odoriferous, but they require a long pipe to smoke them, when they afford a treat unknown in smoking tobacco. The berries of an allied species, *P. acris*, are also called Pimento.

Almendor, or **Almond**, a name given in Brazil to *Geoffroya superba*, a tree of the Bean family (Leguminosæ), having winged leaves; common in Brazil and Venezuela. Its fruit is a leguminous drupe about the size of a walnut, with a greenish-yellow downy rind and a fleshy pulp enclosing a hard, nut-like seed. It is boiled and used as food by the Indians, and the kernel of the nut is also eaten. It grows abundantly on the Island of San Pedro, on the Rio San Francisco, and forms the principal food of the natives. Humboldt, who saw it in Venezuela, describes it as a magnificent tree, having glossy leaves and a great abundance of yellow flowers; he also says the wood is hard and takes a fine polish.

Almond Tree (*Prunus amygdalus*, or *Amygdalus communis*), a low, spreading tree of the Almond family (Drupaceæ). It is a native of Western temperate Asia, and early became widely spread over the Mediterranean countries of Europe and Africa, and according to Dr. Turner's *Lists of Herbs*, it appears to have been cultivated in this country in the middle of the sixteenth century. It is one of our earliest spring flowering trees, and its numerous pink flowers opening before the leaves make it highly ornamental in shrubberies; its fruit sets and attains its proper size, but our summers are not warm enough to bring it to perfection. Although there is only one species, nevertheless there are two kinds, one producing sweet almonds, the other bitter. The sweet almond is greatly used for dessert and confectionery, the part eaten being the two seed lobes (the kernel), which is nutty and sweet. An oil is obtained from both the bitter and sweet kinds; the bitter is one of the most virulent poisons known, its principle being Prussic Acid. A preparation termed Essence of Almonds is prepared from it, which is used in perfumery and confectionery, but great caution is necessary in its use. Almonds form an extensive article of commerce, large quantities coming from Spain, chiefly from Valencia. The best Jordan almonds, so called, come from Malaga, none now come, as formerly, from the valley of the Jordan; the bitter almonds come principally from Mogador in Morocco. The Almond Tree in its natural state seldom exceeds 15 feet in height, but when grafted on the plum it attains the height of 20 to 30 feet, with a trunk 8 to 10 inches in diameter, and in the South of France it is still higher. The wood is hard, of a reddish colour, and used for veneering.

Almond Tree, African (*Brabejum stellatum*), a shrub of the Protea family (Proteaceæ), native of South Africa; it attains the height of 4 to 6 feet. The leaves are oblong-lanceolate, about 4 inches in length, slightly serrate, and produced in whorls. The fruit is a hard follicle, containing a single kernel, like an almond, which is roasted by the natives, and tastes like an almond or chestnut.

Almond Tree, Java (*Canarium commune*), a large tree of the Myrrh family (Burseraceæ), native of India, Malay, and other islands of the Malay Archipelago, in many of which it is cultivated for the sake of its fruit, which is a three-sided drupe containing generally only one perfect seed, which tastes like an almond. They yield an oil. (*See* Elemi.)

Aloe, a genus of succulent plants of the family Liliaceæ, numbering about 150 species, chiefly natives of the Cape of Good Hope and the African Islands. They vary considerably in habit and size, which has led modern botanists to arrange them under separate genera; true Aloes, including the tall species, attaining the height of 6 to 10 feet, of which *A. africana* is the type. *Gasteria* contains a number of short-stemmed or stemless species, with thick, short leaves, of which the well-known Partridge-breast Aloe (*A. variegata*) is an example. *Haworthia* contains smaller species, generally stemless, a few with smooth entire, but the greater number with spiny-margined leaves. The purgative drug called Bitter Aloes is the hardened juice which runs spontaneously from the leaves when wounded of *A. vulgaris* and others; but the best is obtained from *A. succotrina*, which abounds in, and gives a character to, the small island of Socotra at the mouth of the Red Sea. Aloes have long been favourites with amateur cultivators. The Kew collection a few years ago consisted of between 90 and 100 species.

Aloe, American (*Agave americana*), a large succulent-leaved plant of the Narcissus family (Amaryllidaceæ). A native of Mexico and Central America, naturalised in Southern Europe, many parts of Africa, Western Asia, Southern India, and other parts. It is well known in the gardens of this country, and is said to have been introduced about the middle of the sixteenth century. The variety with golden-striped foliage is the greatest favourite. This plant has long enjoyed the reputation of producing its flowers but once in a hundred years, and that when it did so it made a report like a gun. The truth is, that a plant may be forty or fifty years of age before it does flower, and

formerly, there being but few plants in the country, the report of its being in bloom spread rapidly; this accounts for the latter part of the rather fanciful tale. The flower-stem grows at a rapid rate, often 6 inches per diem, attaining the height of 20 to 30 feet, bearing numerous flowers. The plant, after flowering, dies, but previous to this it throws up numerous suckers, by which the species is propagated. In Mexico it forms impenetrable fences, and is moreover of great importance to the inhabitants, affording their national drink, "Pulque," which is obtained by cutting out the young flower-bud, when the cavity becomes filled with liquor, which is collected daily. It contains a large quantity of sugar, and after fermentation an intoxicating spirit is made from it. The odour of the beverage is disagreeable to Europeans, but the repugnance once overcome, it is relished.

There are many species of this genus yielding fibre, such as *A. fetida* and *vivipara*, the latter having a stem 2 to 4 feet high. They are common throughout Venezuela, New Grenada, and other parts of tropical America, being known by the name Maguey. Their thick, fleshy leaves contain a large quantity of strong fibre, the cleaning and preparation of which forms a native occupation, and the fibre an important article of trade. It is known as Pita thread, and is useful for making ropes, mats, and for many articles of domestic use. The flower-stems become dry and hard, and, containing sand, they make good razor-strops, as do also those of *A. americana*. Allied to this is the genus *Fourcroya*, of which there are several species, all natives of the same country as *Agaves*, their leaves yielding fibre. The most remarkable is *Fourcroya longeava*, a native of Mexico. Its stem rises 20 to 30 feet high, or more according to age, and is 12 inches in diameter, with erect arms or branches near the top, each terminated by a crown of lanceolate glaucous leaves. The flower-stem rises from the centre of the crowns 20 to 30 feet high, bearing numerous pale flowers. It forms a peculiar feature in the landscape. Some years ago two plants of *F. vivipara* formed conspicuous objects in the conservatory at

Kew, both producing flower-stems at the same time, which grew to the height of 36 feet, bearing numerous viviparous buds.

Althea Frutex, an old garden name for *Hibiscus syriacus*, better known by the name of Syrian Rose, belonging to the Mallow family (Malvaceæ), native of Syria; a stiff, branched, deciduous shrub, leaves tri-lobed, flowers strong, red, purple, yellow, and white. Introduced at the end of the sixteenth century. It is one of the very few shrubby species of the family hardy in this country.

Alum-root, a name in North America for *Heuchera americana*, a herb of the Saxifrage family (Saxifragaceæ). It is astringent, and said to possess medicinal properties.

Amadou. (See German Tinder.)

Amanita (*Amanita muscaria*), formerly *Agaricus muscarius*, a fungus of the Mushroom family (Fungi), native of this country, Europe, and Northern Asia. Its pileus is bright red, the size of a large mushroom, studded with white or yellowish warts; it is highly poisonous. In Siberia and Kamschatka, where it is common, it is collected, strung on strings, and dried; it is then said to lose its poisonous properties, and is used as an article of food. Its most important use in these countries is for its intoxicating properties. The usual mode of taking the fungus is to roll it up in a ball and swallow it without chewing; the desired effect comes on two hours after taking it. Pleasing emotions are first produced, involuntary words and actions follow, and sometimes an entire loss of consciousness. When not taken in overdose it proves highly stimulant to muscular exertion. Its effects on the nervous system are often ludicrous; the patient, for example, taking a long spring to jump over a straw as though it were a log of wood. In this country the *Amanita*, steeped in syrup, is used for the destruction of house flies.

Amaryllis, the botanical and familiar English name of an extensive, pretty-flowering genus of bulbous herbs of the Narcissus family (Amaryllidaceæ), chiefly natives of Brazil, largely cultivated in this country. The well-known Belladonna Lily

(*Amaryllis belladonna*) and Guernsey Lily (*A. Sarniensis*) are natives of the Cape of Good Hope, naturalised in Guernsey, from whence their bulbs are yearly imported to this country.

Amber. (See Gum Copal.)

Amber Tree, the common South African name for *Anthospermum æthiopicum*, a shrub or small tree of the Cinchona family (Rubiaceæ); it has linear smooth leaves and small flowers; the male and female on different plants. It is an old inhabitant of greenhouses in this country, but possesses no special interest.

Ammoniacum, a gum-resin produced by *Dorema ammoniacum*, a perennial of the Carrot family (Umbelliferæ). It is a native of Persia and Western India. It attains the height of 6 to 7 feet, and has large compound leaves. The stem, when punctured artificially, or naturally by insects, yields a milky juice, which hardens and becomes Gum Ammoniacum. It is an opaque, cream-coloured gum, used in medicine as a stimulant.

Anacahuite-wood.—Under this name, about the year 1860, a kind of wood was imported from Tampico, in Mexico; it was said to be a specific for consumption, and was much sought after, especially by the Germans; and although 10,000 lbs. of the wood have been imported into Bremen and Hamburg, and sold at a high rate, it nevertheless at that time fell far short of the demand. Its healing properties are, however, not well authenticated. It is said to be the wood of *Cordia Boissieri*, a tree of the Sebesten family (Cordiaceæ), native of Mexico.

Anchorvy Pear (*Grias cauliflora*), a slender, tall, unbranched tree of the Barringtonia section of the Myrtle family (Myrtaceæ), attaining the height of 40 to 50 feet, terminated by a crown of smooth elliptical leaves, 2 to 3 feet in length. Its large white flowers are produced on the stem below the leaves, and are succeeded by a large fleshy fruit, of an elliptical ovate form, which in flavour much resembles the mango; while unripe it is made into a pickle. It is a native of the West Indies, and abundant in Jamaica. In the Palm-house at Kew a plant 25 feet high produced pendulous leaves 4 feet in length by 1 foot

in breadth, and probably it is the largest-leaved exogenous tree known.

Andromeda, a botanical and familiar name of an extensive genus of shrubs and small trees of the Heath family (Ericaceæ), natives of Northern Asia, America, and Europe. Many have been introduced into this country, the North American species being hardy, and forming ornamental evergreen shrubs. *A. arborea* has elliptical acute leaves that are bitter, hence it is known by the name of Sorrel Tree. *A. polifolia* is the only British species, being found in some of the mountainous districts of Scotland; it is a neat-growing plant, about a foot in height, reputed to be poisonous to sheep. In Nepal, Sikkim, and other parts of Western Himalaya, *A. ovalifolia* is highly poisonous to goats and sheep, and when employed as fuel the smoke causes the eyes and face to inflame.

Anemone, the name of a genus of perennial herbs of the Buttercup family (Ranunculaceæ), of which there are a considerable number of species, widely dispersed throughout the temperate regions of the northern hemisphere, of which three are natives of Britain—namely, the White-flowered Wood Anemone (*A. nemorosa*); the Blue-flowered (*A. apennina*); and *A. pulsatilla*, known as the Pasque Flower. *A. coronaria*, native of South Europe, has large, coloured flowers, of which there are many double varieties, and is a favourite with florists.

Angelica (*Angelica Archangelica*), a biennial herb of the Carrot family (Umbelliferæ). It has parsnip-like leaves, and grows to the height of 3 to 4 feet. It is a native of this country. The leaf-stalks are candied, and known as Candied Angelica. The roots are aromatic. It is also called *Archangelica officinalis*.

Angelica Tree (*Aralia spinosa*), a small tree of the Ivy family (Araliaceæ), native of the Southern United States. The plant shoots up many straight, shrubby, unbranched stems, naked and prickly below, bearing a crown of large compound pinnate leaves, like a palm or tree-fern. It sometimes attains the size of a small tree, 10 to 12 feet high; but in good soil it

is said to attain the height of 30 to 40 or even 60 feet, with a diameter of 3 to 12 inches. The bark when bruised emits an aroma like Angelica. It is used medically as an emetic and purgative, and is a reputed remedy for the bite of the rattlesnake.

Angustura Bark (*Galipea cusparia*), a tall, trifoliate-leaved tree of the Rue family (Rutaceæ), native of North Brazil and Venezuela. The bark is febrifugal, and said to be equal to quinine. The extract of the bark forms the basis of the bitters so highly esteemed in the United States. As an aromatic bitter it stimulates the appetite, and is a remedy in diarrhœa. Poisonous effects have been the result of the use of some of the Angustura bark of commerce, which had been derived from spurious trees, *strychnos nux vomica* being one. (*See Nux Vomica.*)

Anise-seed (*Pimpinella anisum*), an annual of the Carrot family (Umbelliferae), native of the South of Europe, where it is cultivated, as well as in this country, for the seeds (fruits) which are used in confectionery, and a well-known cordial called Aniseed is made from them.

Anise, Star, a name given to the fruit of *Illicium anisatum*, an evergreen, smooth-leaved shrub of the Magnolia family (Magnoliaceæ), native of China, attaining the height of 8 or 10 feet. It derives its name from the carpels of the fruit being united in a circle, representing a star about an inch in diameter. It is highly aromatic, and is in great repute in China and other countries of the East, where it is used as a condiment, and is imported to Europe for flavouring spirits, as well as for medicinal purposes. It is said by the native doctors to be stomachic and carminative. Its pungent and aromatic flavour and odour is due to the presence of a volatile oil, which is obtained from it by distillation, and is similar to that of common Anise-seed oil. *I. religiosum*, a pretty, smooth-leaved evergreen shrub or small tree, native of Japan; is held sacred by the Japanese, who form wreaths of the flowers with which to decorate the tombs of their deceased friends; the fragrant bark is also used as incense before their deities. Powdered, it is burned in

tubes, graduated to mark the time. Its fruit is considered poisonous. *I. floridanum*, an evergreen shrub allied to the preceding, is a native of Florida, and other Southern States ; it possesses also aromatic properties, but the leaves are said to be poisonous, and on that account it is named Poison Bay.

Antidote Cocoon, a name in Jamaica for *Feuillaea cordifolia*, a climber of the Gourd family (Cucurbitaceæ). It is a native of Jamaica, and ascends to the top of the highest trees ; its stem is permanent, and clings to the trees by tendrils. It has palmate leaves ; the fruit is globular, 4 or 5 inches in diameter, and contains flattened round seeds, about 2 inches across, which are used for the cure of snake-bites. An oil is also expressed from them, but more abundantly from an allied species, native of Peru.

Apple (*Pyrus Malus*), a tree the type of the Apple family (Pomaceæ). It is recorded to grow wild in Western Upper India, the regions of the Caucasus, Armenia, and some parts of Europe, and as carbonised apples have been found in the deposit remains of the prehistoric lake-cities of Switzerland, it is evident that they were then used as food ; it is presumed that they were the fruit of the wild apple tree that we term Crabs. Greek and Roman history tells us that the apple tree was early known in these countries, and that it was introduced into Rome in the time of Appius Claudius (449 B.C.) According to Pliny the younger, who flourished during the end of the first and the beginning of the second centuries, it was grown in orchards ; he speaks of twenty-two distinct kinds under the names of Claudians, Pompeians, etc. We learn further that the art of grafting was then practised, as he mentions crabs as small and sour ; it shows that good apples were then cultivated at Rome, the sorts being known by the general name of "*Pomum Malum*."

It is supposed that apple trees were early introduced into Britain by the Romans, but it is not very clear how and when the fruit received the name of Apple. Dr. Prior, in his *Derivation of Names of British Plants*, considers Apple to be an Anglo-Saxon word, and to have come from the Norse (old Danish) *Appel*, supposed to have been derived from a more ancient

name, *Apalis*. Another authority considers it to be derived from the Celtic word *Abhal*, which means a round body or ball. In early periods of English history there appear to have been different kinds of apples, each known by special names; one of the earliest recorded is the sort called "Pearmain." In the reign of King John (1199) Robert de Evemere held his estate by the annual payment of 200 pearmaines and 4 hogsheads of wine made of pearmaines. Another sort called "Costard" was extensively cultivated in the reign of Edward I. (1272), and being sold in the streets of London, it is supposed that the origin of the word costermonger is a corruption of the word custard or costard. During the last hundred years many fine varieties have been obtained, and are now largely cultivated throughout all temperate countries, in both northern and southern hemispheres.

In the Royal Horticultural Society's catalogue, published a few years ago, 1500 sorts are recorded; but it is only a small portion of that number that are found worthy of cultivation. Although apples are abundantly produced in this country, nevertheless, the supply falls far short of the demand, and they are brought to us in large quantities from the Continent, the United States and Canada, fine apples coming from Nova Scotia, and shipments yearly take place from the United States to India and other warm countries, thus showing that the apple is a universal favourite. Cider is the fermented juice of the apple, and is largely made in the principal apple-growing counties of England. Besides that just described, the term Apple is applied to the fruit of between twenty and thirty different kinds of plants — as, for example, Adam's Apple, Custard Apple, Mammee Apple, May Apple, Love Apple, Thorn Apple, etc., all of which will be found noticed under their respective names.

Apple of Scripture.—It appears that in the time of Solomon a tree grew in Palestine that produced fruit of a golden colour, sweet-scented and delicious to the taste, the Hebrew name of which was *Tappuach*, in the Greek translation of the Bible rendered *melon*, the Greek name of the fruit

we call apple or other globose fruit; but as our apple tree is not a native of Palestine, and therefore unknown in the time of Solomon, and evidently unknown to the translators; they nevertheless appear to have considered it to be the melon, in Latin rendered *malum*, and stands as such in the Vulgate Bible, which the English translators have rendered *apple*, the fruit of *Pyrus Malus*, which, as already stated, is not a native of Palestine. The question therefore arises, What was the tree that produced the golden, sweet-scented, and delicious fruit spoken of in Proverbs and the Song of Solomon? Canon Tristram considers it to have been the Apricot (which see).

Apricot (*Prunus Armeniaca*), a bushy tree of the Almond family (Drupaceæ), a native of Armenia. It early became domesticated in the countries of the Mediterranean; and, according to Turner's *List of Herbs*, it was cultivated in this country in the middle of the sixteenth century. It is more hardy than the peach, and in the neighbourhood of London the fruits come to perfection on standard trees; but the crop is precarious on account of its early flowering. In Syria, Apricots are dried in large quantities and exported to Egypt, under the name of Mishmush. They are also pressed together, and rolled out into thin sheets 2 or 3 feet long, and are called "Moon of the Faithful," the appearance of which a traveller likens to a blacksmith's apron. Both the preparations form a considerable article of food, and are very palatable when stewed. The Apricot is abundantly wild in the hilly country of Palestine. Canon Tristram considers the fruit of the Apricot to be the apples of the English Bible. (See Apple Tree.) In support of this view he says—"The apricot is most abundant in the Holy Land; everywhere it is common in highlands and lowlands alike, by the shores of the Mediterranean and on the banks of the Jordan, in the nooks of Judea, under the heights of Lebanon, in the recesses of Galilee, and in the glades of Gilead, the Apricot flourishes and yields a crop of prodigious abundance; its branches laden with its golden fruit may well be compared to 'apples of gold,' and its pale leaves to 'pictures

of silver.' 'Many times have we pitched our tents in its shade;' thus verifying the words, 'I sat down under his shadow with great delight, and his fruit was sweet to my taste.'" Upon this evidence he considers the Apricot tree to meet all the requirements of the context, and that it is the only tree in Palestine that does so.

Arar, a name in Morocco for *Callitris quadrivalvis*. (See Sandarach.)

Araucaria, a genus of trees of the Pine family (Coniferae), so called from the Araucarians, a race of people living in the Andean regions of Chili, where the genus is represented by *Araucaria imbricata*, a tree attaining the height of 100 or more feet. This remarkable plant was first introduced into this country in 1794, living plants having been brought home by Archibald Menzies, surgeon and botanist in Vancouver's voyage of survey. At a dinner given by the Viceroy of Chili to the officers of the ship, part of the dessert consisted of some kind of nuts, which being strange to Menzies, he took some of them on board the ship and sowed them in a box of earth, where they vegetated, and five plants were safely brought to England. One of these plants is still growing at Kew, another at Windsor Castle, and a third at Dropmore, the latter having outgrown the other two, and is now a fine tree 60 feet high. Thirty years later a number of young plants were introduced by the Horticultural Society, and great importations followed, and thousands of plants were distributed by nurserymen throughout the country, many of them becoming fine trees; but a great number in certain localities succumbed to the severity of the winters of 1866 and 1867; the original Kew and Dropmore trees were comparatively uninjured. The following species are now known, all of which have been introduced, and fine specimens of them are in the greenhouses at Kew, being too tender to live in the open air.

A. brasiliensis is a native of the Organ Mountains of Brazil, and has the general appearance of the above, but its leaves are less in size and not so closely imbricated; and, alto-

gether, it is apparently a more slender tree. It was introduced in 1819.

A. Bidwillii, a native of Queensland, where it forms extensive forests in the interior. Its nuts form an important article of food to the natives, who call the tree the Bunya Bunya, and who migrate to the forest at the season when the nuts are perfect, each tribe or family having allotted to them a certain number of trees, which are retained from year to year, and any one taking nuts from trees not their own are punished. It was feared that in time they would be deprived of this important article of food by the settlers cutting down the trees. To prevent this, the Government have deemed it necessary to take the forests under their charge, and appoint an inspector. The leaves of these three species are rigid, rusciform, and openly imbricate. In the following the leaves are flat, awl-shaped, and imbricate, characteristic of spruce firs.

A. Cunninghamii, called Moreton Bay Pine, first observed by Allan Cunningham in 1826, in the country now called Queensland, and found abundantly on many parts of the coast and adjacent islands.

A. excelsa, called Norfolk Island Pine, native of that island. In the early settlement trees were found 200 to 250 feet high. It was introduced to the Royal Gardens, Kew, in 1793.

A. Cookii, native of the Isle of Pines, New Caledonia. It was discovered by Captain Cook in his second voyage of discovery in the South Seas, and introduced to Kew in 1858. According to Cook's account this is probably the tallest species of the genus.

A. Rulei, also a tall tree native of New Caledonia. Discovered by William Duncan, a gardener in the service of Mr. Rule of Melbourne, whose name it bears. Introduced 1860.

Arbor Vitæ, the common garden name for the species of *Thuja*, a genus of the Cupressus section of the Pine family (Coniferæ). *T. orientalis* and *T. occidentalis* are well known in this country as bushy shrubs, sometimes becoming tree-like, 20

to 30 feet high. *T. orientalis* is a native of China. In some parts of Central Asia it attains a circumference of 15 feet and a height of 36 feet; introduced in 1752. *T. occidentalis* is a native of North America, recorded to have been introduced about the end of the sixteenth century. *Thuja* as a genus originally consisted of other species besides those mentioned, which are now, however, separated under different genera. Of these may be mentioned *Thuja articulata* of North Africa, now *Callitris quadrivalvis*, *Thuja tetragona* and *T. chilensis*, natives of Chili, and *T. Doniana*, native of New Zealand—all large trees, which are now placed in the genus *Libocedrus*. (See Sandarach.)

Arbutus, the name of a genus of trees and shrubs of the Heath family (Ericaceæ), the greater number of the species are natives of America and widely dispersed, extending from California through Mexico to Chili, and represented in the eastern hemisphere by *A. Unedo* and *A. andrachne*. The first is common in the Canary Islands and Madeira, and is now naturalised in the South of Ireland; it forms an ornamental shrub in the gardens of this country, well known by the name of Strawberry Tree, its pretty bell-shaped flowers being succeeded by red fruits resembling strawberries, but unpalatable, as indicated by the specific name of “unedo,” which means eat one, indicating that one is sufficient for a man. *A. andrachne*, a native of the Levant, is similar to the preceding in habit but has broader leaves. During a series of mild winters they form small trees, but in severe weather, such as occurred in 1838, all were killed to the ground, but on again breaking forth they became bushy shrubs. *A. procera*, a native of California, is hardy, and forms a very ornamental small tree. As originally characterised by Linnaeus, *Arbutus* contained two species, native of this country, namely *A. alpina* and *A. Uva-ursi*; they differ from the preceding, being small-leaved procumbent plants, not exceeding a few inches in height, which, with a slight technical difference in the character of their flowers, has led modern botanists to separate them as a distinct genus, under the name of *Arctostaphylos*. They are natives of the mountains of Scotland. *Arbutus*

alpina has black berries, and *A. Uva-ursi* red, and is known by the name of Bearberry.

Areca Palm. (*See* Betel Nut.)

Argan Tree (*Argania sideroxylon*), a low spreading bush or small tree of the Star Apple family (Sapotaceæ), having small leaves. It is a native of Morocco and western parts of North Africa. The fruit is usually about the size of a small plum, but varies very much both in size and shape; it is so abundant that it is collected and used for feeding cattle, the skin and pulp being much relished; but in chewing the cud they eject the hard kernels, which are collected and crushed, when an oil is obtained from them. Introduced to this country about 170 years ago, but is not sufficiently hardy to stand in the open air; a plant growing against the wall at Kew was destroyed by the cold of January 1838.

Argel, or **Arghel**, an Arabian name for *Solenostemma Argel*, a perennial herb of the Swallowwort family (Asclepiadaceæ), native of Arabia and Egypt, where its leaves are said to be used for adulterating senna.

Arnatto (*Bixa Orellana*), a small tree with heart-shaped leaves of the Indian Plum family (Bixaceæ), originally a native of South America, but now dispersed throughout tropical regions generally. The fruit is a dry prickly husk, about an inch in length, consisting of two valves; when ripe of a brown colour; the seeds are numerous, covered with orange-coloured pulp, which hardens when dry, and being separated from the seeds forms the Arnatto of commerce. The Indians of Guiana and other parts of tropical America paint their bodies with it. In this country it is used by silk-dyers and varnish-makers, also for colouring cheese, cream, and chocolate.

Arracacha. (*See* Carrot.)

Arrack. (*See* Wine Palm.)

Arrowhead, a common name for (*Sagittaria sagitifolia*) a perennial aquatic herb of the Water Plantain family (Alismaceæ), native of Britain, common on the undisturbed banks of the Thames near London. It has a fleshy corm varying in size,

some as large as a small hen's egg, from the apex of which rise several arrow-shaped leaves, 6 to 8 inches long. It is common in rivers throughout the northern hemisphere; in North-West America it forms an article of food to the native population, and in China it is even cultivated as a food plant. In its raw state it contains a bitter milky juice, which is expelled by boiling.

Arrowroot (*Maranta arundinacea*), a herb of the family Marantaceæ; it is extensively cultivated in the West Indies and tropical America. It is a reed-like plant, and the farinaceous substance known as Arrowroot is obtained from its fleshy rhizomes by maceration, washing, and drying. There are several varieties, one with dark-coloured stems and leaves is cultivated in Trinidad. In the East Indies Arrowroot is obtained from a variety of the same plant which has been described as a distinct species under the name of *M. indica*. The name Arrowroot is said to be derived from the circumstance of the Indians applying the roots to wounds received from poisoned arrows.

Artichoke (*Cynara Scolymus*), a strong-growing hard perennial of the Composite family (Compositæ), having large gashed leaves 2 or 3 feet long, of a grayish colour, from which rises a stout flower-stem, 3 or 4 feet high, the flower-heads composed of numerous thick imbricated scales, the lower part being thick and fleshy, and called artichoke bottoms, which is the part eaten as a vegetable. It is a native of the countries bordering the Mediterranean, and has been known in this country for at least 300 years, and is in general cultivation.

Asa dulcis, a celebrated drug known to the ancients, and supposed to have been furnished by *Thapsia garganica*, a plant of the Carrot family (Umbelliferae), native of Southern Europe and Algeria.

Asafœtida, a gum-resin obtained from *Narthex asafœtida*, formerly *Ferula asafœtida*, a perennial plant of the Carrot family (Umbelliferae), attaining the height of 6 to 7 feet, furnished with fennel-like leaves. It is a native of Persia, Afghanistan, and the region of the Oxus. It has a strong thick fleshy root which when cut yields a milky juice, and upon hardening becomes the

stinking drug called Asafoetida. Although strongly disagreeable to the smell and taste, it was nevertheless held in high repute both in ancient and in modern times by the Persians, and other nations of Western Asia, for seasoning curries and other food. It was formerly highly valued for its medicinal properties, and considered worth its weight in silver. Though still occasionally prescribed in this country in medicine, its use is rapidly dying out.

Asarabacca (*Asarum europæum*), a perennial herb of the Birthwort family (Aristolochiaceæ), native of this country. It is a low herbaceous plant with creeping stems, producing numerous kidney-shaped leaves about 6 inches high, growing compactly together; the flowers are produced on short stalks hid amongst the leaves, and of a brown colour. It was once held in medicinal repute by herbalists, but is not now much used.

Ash, Chinese (*F. chinensis*), a small tree, native of China; it is remarkable from an insect, a species of *Coccus*, living on it, and being so abundant on the branches as to give them the appearance of being covered with flakes of snow. The insect perforates the bark and imbibes the juice of the tree, its body as well as the branch of the tree becoming a waxy mass, which is scraped off, and after boiling forms a wax like beeswax or spermaceti. It has been imported to this country, but is too expensive for common use.

Ash, Common (*Fraxinus excelsior*), a wing-leaved tree of the Olive family (Oleaceæ). This noble and valuable timber tree is native throughout Europe, some parts of Western Asia, and North Africa. It lives to a great age, and is extensively planted in this country for its wood, which, on account of its hardness and toughness, is used for all purposes where tenacity is required, such as garden and agricultural implements, also when young for making hoops.

Ash, Manna (*Fraxinus Ornus*), by some botanists ranked as a distinct genus under the name of *Ornus europæus*, a much-branched tree, native of the South of Europe and Palestine. It attains the height of 25 or 30 feet, and produces spikes of pretty

white flowers, the narrow petals and stamens giving it a fringe-like appearance. It yields the substance called Manna, which is obtained by making incisions in the bark, when the juice exudes and hardens.

The tree is cultivated in the South of Italy and Sicily from whence manna is imported, and is used as a mild purgative. In this country it forms an ornamental tree, and is well known as the Flowering Ash.

Ash, Mountain (*Pyrus Aucuparia*), a small tree of the Apple family (Pomaceæ), native of this country; it attains the height of 20 to 30 feet, having erect branches and winged leaves. It is highly ornamental in autumn and winter with its beautiful red berries, which are rough to the taste and not very palatable, but afford abundance of food to the feathered tribe. In Scotland it is called the Rowan Tree, and was formerly believed to ward off witchcraft, a common saying being "Rowan tree and red thread put the witches to their speed."

Asparagus (*Asparagus officinalis*), a perennial herb of the Lily family (Liliaceæ), a native of the sea-coast in the southern counties of England. It also occupies large tracts of country in Poland and Russia, and other parts of Europe. It is said to have been cultivated by the Romans before the Christian era. It is extensively grown as a spring vegetable in the vicinity of London and Paris. There are several species from South Africa and India, having climbing or trailing stems, often spinose.

Asparagus, Bath or French (*Ornithogalum pyrenaicum*), a bulbous plant of the Lily family (Liliaceæ), native of this country, abounding in some parts of the southern counties, especially about Bath, where the young flower-stalks are collected, and eaten as a vegetable under the above names.

Aspen (*Populus tremula*), a tree of the Willow family (Salicaceæ). The trembling poplar is a native of Britain, and is a fast-growing tree, remarkable from the tremulous twirling of its leaves. (See Poplar.)

Asphodel (*Asphodelus ramosus*), a cæspitose perennial of the Lily family (Liliaceæ), with broad grass-like leaves, and flower-

stems 3 to 4 feet high, bearing white flowers, known as the Silver Rod. It is found in great abundance in the vicinity of Palmyra in Syria, where its roots are extensively collected, and form an article of trade to Damascus and other places in Palestine. They are ground into meal, and made into paste used in bookbinding, shoemaking, and such like.

Asphodel, Lancashire (*Nartheceium ossifragum*), a pretty yellow-flowered perennial herb of the Lily family (Liliaceæ), abundant in boggy places in this country. It is said to be injurious to the bones of sheep, hence the name *ossifragum*, which means "bone-breaking."

Assai, in Para the name of a drink made from the berries of *Euterpe edulis*, a slender, smoothed-stemmed, wing-leaved palm (Palmæ), attaining the height of about 30 feet, a native of Brazil, especially of the lower countries of the Amazon, Orinoco, and other rivers. Its fruit is about the size of a sloe, of a bluish colour, a great number being produced in a bunch. They contain a small quantity of pulpy matter between the skin and the nut, which is removed by rubbing in water; it is then strained off, and sugar and cassava flour are added to the liquor, which forms an important article of food to the people of Para, and is hawked in the streets.

Atropine. (*See* Nightshade.)

Aucuba, the Japanese name for the well-known garden shrub called botanically *Aucuba japonica*, belonging to the Dogwood family (Cornaceæ). It is a native of Japan, is dioecious, and the female plant was introduced to this country in 1783. In 1862 the male plant was introduced by Mr. Fortune, and before long the female plants were seen in most gardens covered with beautiful red berries, which adds greatly to its previous ornamental character.

Auricula (*Primula Auricula*).—This word is derived from the supposed resemblance of the leaves to the ears of the bear, hence the English name Bear's Ear for this favourite plant, the typical form being known by the name of Yellow Auricula, an evergreen herbaceous plant of the Primrose family (Primulaceæ),

a native of Switzerland, recorded to have been introduced to this country three hundred years ago. It early became a florist's flower, and, many varieties being raised, led to the establishment of Auricula societies, and the awarding of prizes for new and fine sorts, which are still continued.

Ava. (*See Kava.*)

Avellano—nut, common. (*See Hazel and Filbert Nuts.*)

Avellano, Chilian, the name of *Guevina avellana*, by some called *Quadria heterophylla*, a tree of the Protea family (Proteaceæ), native of Chili; it has large winged leaves of a rusty colour; the fruit is a conical nut, the kernel of which is eaten.

Avignon Berries. (*See Yellow Berries.*)

Azalea, a botanical (now familiar) name for a beautiful genus of shrubs of the Heath family (Ericaceæ). They are natives of China, Armenia, and North America. The flowers are showy, of various colours, and similar in form to many rhododendrons, but differing from that genus in having only five stamens, rhododendrons having ten.

A. pontica, the common Yellow Azalea, is a native of Armenia, introduced about the end of the last century; it is a well-known, highly-ornamental garden shrub. Its flowers are fragrant, but the honey made from them is poisonous, and is believed to have been the cause of the illness and death of the Greek soldiers, who (Xenophon says), after eating it, fell stupefied in all directions, producing the appearance of a battlefield covered with dead bodies. The white and red flowered Azaleas (*A. indica*), native of China, are not sufficiently hardy to stand in the open air in this country, but by cultivation fine varieties have been obtained, which are highly ornamental plants in the greenhouse. The original type of the genus *Azalea* is *A. procumbens*, a low compact trailing evergreen shrub, with small, ovate, oblong leaves, and rose-coloured flowers, the whole habit of the plant being entirely different from the above species; and, although differing but little in the technical character of the flower of Azalea, botanists have nevertheless separated it as a distinct genus under the name of *Loiseleuria procumbens*; it is

native of the northern parts of Asia, America, and Europe, and in Scotland it is found in mountain moors.

Babool, a name in India for *Acacia arabica*. (See *Acacia*.)

Bacaba (*Enocarpus Bacaba*), a wing-leaved palm having a smooth stem, attaining the height of 40 to 50 feet, producing its leaves in two distinct opposite rows, which is consequent on the upper part of the stem being flattened. It grows in abundance about Santarem in the region of the Amazon. Its fruit is a berry produced in bunches weighing 30 or 40 lbs., and is much prized by the natives, who make a pleasant drink by rubbing the pulp off into water, which has a milky appearance, and an agreeable nutty flavour similar to the *Assai* drink made of the berries of the *Euterpe edulis* at Para.

Bael or **Bhel Fruit**, a name in India for the fruit of *Ægle Marmelos*, a small tree of the Orange family (Aurantiaceæ), native of Coromandel, and other parts of India, producing a fruit about the size of an orange, having a hard shell containing ten to fifteen cells, filled with tenacious transparent gluten, which is delicious and fragrant; it is used as an aperient, and in other ways medicinally, and is much esteemed. The dried fruit is used in this country as an astringent.

Balata. (See *Gutta-percha*.)

Balm.—This word first appears in the book of Genesis as the name of one of the substances carried by the Ishmeelites from Gilead into Egypt, and as it is mentioned with “spicery” and “myrrh,” leads us to believe that it was the produce of some plant growing in the rocky country of Gilead. Bible commentators are not agreed as to what plant it was that produced this balm, but by most it is considered to have been the sap of the Lentisk tree, *Pistacia Lentiscus*, a small tree of the Terebinth family (Anacardiaceæ), not exceeding 15 to 20 feet in height, and about a foot in diameter, with winged smooth leaves of a pale colour, and inconspicuous flowers. It is a native of Western Asia, and abounds throughout Palestine, especially in the rocky country of Gilead. It has become naturalised in the Greek islands and on the coasts of the Mediterranean; its sap is

aromatic, and is largely collected, and forms the Mastic of commerce. Balm is also supposed by some to be the oil obtained from the fruit of *Balanites ægyptiaca* (see Zukkum). The gum-resin of modern commerce, called Balm of Gilead, is now known to be the produce of *Balsamodendrum opobalsamum*, a small branched tree of the Myrrh family (Burseraceæ), found on both sides of the Red Sea, south of 22° north latitude. It is recorded from several places on the Nubian coast and in Abyssinia, both from the coast and inland hills, and also from Somali-land. From the Asiatic side the plant has been found at Ghizan on the Red Sea, in Arabia from the neighbourhood of Aden, and from the province of Yemen, little less than a thousand miles from Gilead, therefore it may be safely said that it could not have furnished the balm which the Ishmeelites were carrying from Gilead into Egypt. Consequently the name of Balm of Gilead for this tree misleads. It is not now known in Palestine, and it is conjectured that the famous tree referred to in the sacred writings was in later times introduced to Palestine from Arabia by the Queen of Sheba in the time of Solomon, and, being highly prized, plantations of it were formed by Solomon near Jericho; according to Josephus, they were in existence in his time, and the Romans, on their conquest of the Jews, carried branches of it in triumph to Rome. As no vestige of the plantations or of the tree were found during the time of the Crusades, it would appear that they must have been neglected or wilfully destroyed, the country having at that time come under the rule of the Turks. It must be understood that the above-mentioned balm trees have no relation to the plants cultivated in gardens, and called Balm (*Melissa officinalis*), a perennial herb of the Mint family (Labiatae), native of Southern Europe, nor with the sweet-smelling herbaceous plant familiarly known as Balm of Gilead (*Dracocephalum canariense*), a native of the Canary Islands. The patent medicine called "Solomon's Balm of Gilead" is a preparation of cardamoms with brandy.

Balm of Gilead Fir (*Picea balsamea*), a tree of the Pine family (Coniferae), native of Canada, and other parts of North

America. Its leaves are silvery-white on the under side; the cones yield a turpentine called Canada Balsam, which is used for mounting and preserving microscopic objects.

Balsam.—This word first appears in Josephus's *History of the Jews*. In speaking of presents brought by the Queen of Sheba to Solomon he says—"They say also that we possess the root of that balsam which our country still bears by this woman's gift." Since then the word Balsam has been given to gummy and oleo-resinous substances, the produce of different kinds of trees; in most cases it is highly odoriferous, and is used in perfumery, medicine, and the arts.

Balsam Bog (*Azorella* [*Bolax*] *glebaria*), a remarkable plant of the Carrot family (Umbelliferae), native of the Falkland Islands. It is a shrub, consisting of small, short, woody branches, giving the plant the form of a ball, increasing its diameter by the repeated forking of the branches, varying in size according to age, some tufts of old plants measuring 3 to 4 feet across, and the same in height, hard and firm, attached to the ground by a tap-root; it has numerous heath-like leaves and small flowers. A gum-resin exudes from its branches, which is said to be used as medicine. There is a specimen of the plant in the Kew Museum 9 feet in diameter.

Balsam, Canada. (See Balm of Gilead Fir.)

Balsam Copaiva.—*Copaifera Lansdorffii*, *officinalis*, *Martii*, *guianensis*, and other species, hard-wooded, wing-leaved trees of the Bean family (Leguminosae), found in the forests of Northern Brazil, Guiana, Venezuela, and New Grenada. In some of these localities the trees attain the height of 80 feet, having a clear stem of 50 feet, the circumference at three feet above the ground being 5 or 7 feet. The liquid Balsam collects in veins and fissures in the interior of the tree, in some cases in such quantity as to swell the wood and bark, causing them to burst with a report; but very little fluid seems to exude from these cracks. To obtain the Balsam, the copaiba collector cuts a hole in the tree a foot square about two feet above the ground, deeply into the wood; on the axe striking a reservoir or fissure, the

liquid rushes out with a gurgling noise and in such quantity as to fill a pint vessel in one minute. Besides these veins, the whole wood of the tree is impregnated with the Balsam, but none is found in the bark. It is stated that a good tree will yield 12 lbs. in about three hours; after a few hours the flow almost ceases. The Balsam on issuing from the tree has a powerful fragrance; but on passing the houses where it is stored in Para an odour by no means pleasant is experienced. That which is collected near Para is said to be produced by a species called *Copaifera multijuga*, described, however, as a very doubtful member of the genus. Large quantities come from the upper region of the Amazon. It is floated down in hollow trees like canoes, some containing as much as 2500 gallons, and shipped to Europe and North America. It is chiefly used in medicine and perfumery.

Balsam, Garden.—This well-known garden plant is an annual of the Balsam family (Geraniaceæ), and is called *Impatiens balsamina*. It is a native of India, and is recorded as having been introduced into this country before 1596. Many fine double varieties have been raised from seed. *I. noli-me-tangere*, called Touch-me-not, is an annual, native of this country, plentiful on many parts of the banks of the Thames. It takes its name Touch-me-not from the circumstance of the capsule when ripe, on being touched, bursting elastically, and throwing the seeds to some distance. Of late years a number of species of Balsams have been introduced from Ceylon and India, and have very showy flowers. They are chiefly cultivated in botanic gardens.

Balsams of Peru and Tolu.—The descriptions of the trees yielding these Balsams are so conflicting that it has been difficult to determine whether they were produced by two or more species of the genus *Myrospermum* of the Bean family (Leguminosæ). They are large trees with pinnate leaves, the pinnæ of which vary in size from 2 to 4 or 5 inches in length; they are oblong, ovate-obtuse, or acuminate, smooth or covered with fine hairs, which differences, if not marking distinct species, may to

a certain extent be due to climatal influences, consequent on their wide geographical range, being natives of Peru and other parts of tropical America, particularly Guatemala, and the west coast of Central America. Balsam of Peru being the produce of *M. Pereiræ*, or as it is now called *Toluwifera Pereiræ*; and Balsam of Tolu *M. toluwiferum* or *Toluwifera Balsamum*. This Balsam is a fluid generated in the bark of the tree, and is obtained by making V-shaped incisions in the bark, beneath which are fixed small gourds; when these are filled they are removed, the Balsam being afterwards purified and put into larger vessels. Its consistence is thick and tenacious, and by age becomes hard and brittle. It is highly fragrant. At San Salvador the tree producing Balsam of Peru is stated to attain the height of 50 feet, and to obtain the Balsam the trees are beaten on four sides with a blunt instrument, taking care to leave four intermediate strips of bark unbeaten, by which the tree retains its vitality; the part beaten becomes loosened from the wood, but is not broken externally; notches are cut in the loosened bark, fire is applied to the notches, which ignites the exuding Balsam, and is allowed to burn for a short time; cotton rags are then stuffed into the wounds, and after fifteen days the balsam begins to flow copiously; the rags on becoming saturated are thrown into vessels of boiling water, on which the Balsam floats, and as it collects it is skimmed off; it is then of the consistency of turpentine, of a dark colour, and is purified by re-boiling. Like the preceding, it is highly aromatic, and is used in medicine and perfumery.

Balsam, West Indian, a gum-resin obtained from the different species of *Clusia*, a genus of the Gamboge family (Guttiferæ), natives of the West Indies and tropical America, where they are called Balsam trees. They are small, much-branched, soft-wooded trees, with opposite thick, soft leaves; they are partially epiphytal, sending down thick aerial roots from the stems and branches. A gum-resin is obtained from the stems of *C. multiflora* and other species. It is odoriferous, and in Peru and other parts of South America is burnt as

incense in Roman Catholic churches. *C. grandiflora*, a native of Surinam, has leathery leaves 7 inches to a foot long, and beautiful white flowers 5 to 6 inches in diameter. *C. insignis*, a native of Brazil, has smaller flowers than the preceding; a quantity of resin exudes from the disc of the flowers and stamens, which is mixed with the butter of the chocolate nut, and used medicinally by the women of Brazil as an external application to sores.

Bamboo, a general name for a tribe of grasses termed *Bambusaceæ*, of which there are 20 genera, comprehending 170 species. They are widely spread, chiefly in the tropics and sub-tropics of both hemispheres. The greater number are found in the continent of India and Malayan Islands, America and West Indian Islands, a few only in Africa, and none in Europe. They consist of strong-rooted perennial plants with jointed hollow stems, rarely solid and varying greatly in size, some being reed-like, others with stout cane-like stems varying from 20 to 100 or more feet in height, terminating with branches furnished with grass-like leaves of various forms and sizes. A few of the small-growing species, such as *Arundinaria japonica* and *A. falcata*, are sufficiently hardy to grow in the open air in this country.

Bamboo Blowpipe of the Indians of the Orinoco and Amazon (*Arthrostylidium Schomburgkii*), a native of Guiana and of the head waters of the Orinoco and Amazon. It attains the height of 50 to 60 feet, with a diameter of $1\frac{1}{2}$ inches, and in general appearance is similar to the common Bamboo, but differs in the lower part of the stem, for about 15 or 16 feet, having no joints, and so producing a continuous, smooth, hollow tube, which forms the blowpipe, or what may properly be called the rifle of the Indians. The natives use it by simply placing a poisoned arrow in the tube, and with a strong puff from the mouth, the arrow, with unerring aim, strikes the bird or any other object pointed at. The bird or animal struck speedily dies, but the flesh is not rendered unwholesome. The pipes are much valued as heirlooms. They are known to the natives as "Sarbicans."

Bamboo, Common (*Bambusa vulgaris*).—This is quite a cos-

mopolitan species, being common throughout tropical Asia and America. It grows to the height of 100 or more feet, the diameter at the base being about a foot, the upper part terminated with widespread leafy branches ; it remains perfect until it flowers, which is rare. When it does flower the whole of the extensive tract of jungle flowers at the same time, and it is recorded that at different times the quantity of seed produced prevented famine in several parts of India. After flowering the stems die. In 1864-66 a general flowering took place in Bengal and other parts of India, and the canes dying caused great inconvenience for want of Bamboo for building and other purposes, for, like the cocoa-nut, few plants are more useful in domestic economy than the Bamboo. It is not only used for house-building, but its hollow stems are converted into water pipes and domestic utensils generally. Ornamental trinkets are also made of it.

The Bamboo is of rapid growth, and attains its full height in a few months in the Palm-house at Kew. Two stems from the same root attained the height of 36 feet in seventy days. The young stems have lately come into repute for paper-making, and it is now being cultivated for that purpose both in the East and West Indies.

Bamboo, Male, a name in India given to *Dendrocalamus strictus*, attaining the height of 100 feet or more. Widely distributed throughout India. Its solid stems are used for many purposes, but especially for spear shafts. An allied species, *D. gigantea*, is growing in the Palm-house at Kew.

Banana. (See Plantain.)

Baneberry (*Actæa spicata*), a strong-growing perennial of the Buttercup family (Ranunculaceæ), a native of North America, found also in some districts of the North of England, but rare. Its berries are black, about the size of currant-berries, but poisonous. It is also known by the name of "Herb Christopher."

Banyan Tree (*Ficus bengalensis*), a tree of the Mulberry family (Moraceæ). In India this is an immense spreading

tree, with broad, oval, firm leaves. It emits aerial roots from the branches, which descend like ropes, entering firmly into the ground, according to age thickening and becoming like pillars, the branches continuing to extend and cover a vast space of ground. A tree growing on the bank of the Nerbuddah in India covers an almost incredible area, of which the circumference now remaining (for much has been swept away by the floods of that river) is nearly 2000 feet. The overhanging branches which have not yet thrown down their props or supports stretch over a much larger space. The whole is said to be capable of sheltering 7000 men.

Baobab, or Monkey Bread, also called "Sour Gourd" (*Adansonia digitata*), a remarkable tree of the Silk Cotton section of the Mallow family (Malvaceæ), native of most parts of Africa, from east to west. It grows to the height of about 40 feet, but its girth is entirely out of proportion to its height, some trees being 30 feet in diameter, becoming contracted towards the top. An old Baobab is said to be more like a forest than a single tree. The head consists of numerous large spreading branches, densely furnished with foliage, the centre one rising perpendicularly to the height of 60 to 70 feet, the others spreading all round, forming a spherical head 100 to 150 feet in diameter, and others again drooping and hiding the main trunk. The wood is soft and spongy; the negroes cut out chambers in the sides of the trees, in which they suspend the dead bodies of those not entitled to their religious rite of burial. With regard to the age of large Baobabs, Humboldt considers them and the Dragon tree of Orotava "the oldest living organic monuments of our planet." The traveller Adanson, who first brought them into special notice, saw trees with dates cut in them of the fourteenth century, and calculated them to be upwards of 5000 years old. In some trees the centres are hollowed out sufficiently to contain 20 to 30 men, and the health of the tree remains unimpaired. The bark is made into ropes and cloth by the natives. It is stripped off from different parts of the tree as high as they can reach, and it again forms, and the operation being repeated the upper part of

the tree above the stripping becomes more enlarged than the lower stripped part. The fruit consists of a large, oblong, indehiscent woody capsule 8 to 12 inches long, covered with green velvety down, which becomes brownish when dry; it contains numerous seeds, the size of peas, embedded in pulp, which is slightly acid and agreeable, and forms part of the food of the natives. Major Pedley, in his expedition in search of Mungo Park, lived almost exclusively on it for twelve days. When dry it becomes hard and corky. In some districts the natives call the tree "Mowana." As an example of the slow growth of the Baobab, one at Kew, though more than eighty years of age, was in 1858 only $4\frac{1}{2}$ feet high, consisting of a slender erect stem, bearing a few leaves at the apex only, rising from a swollen, gouty base 6 to 7 inches in diameter. The plant represented a miniature Baobab.

A species allied to the preceding is a native of North Australia. It was first noticed by Allan Cunningham in one of King's voyages in 1818, who called it the Gouty Tree. It was afterwards frequently seen and specially noticed by the explorer Gregory, in whose honour it has been named *A. Gregorii*. The trees grow singly, or several together from a centre. One so composed measured 85 feet in circumference, and did not exceed 25 to 30 feet high; one main stem measured 35 feet and another 40 feet in girth. The leaves, flowers, and fruit are produced from a small, ordinary-looking tree stem, growing out at the top. The fruit is not so large as that of the preceding, and is attached by a shorter foot-stalk, being about 6 inches in length and 3 to 4 in diameter, and covered with a velvety down. It contains a dry, farinaceous substance, in which the seeds are embedded. When ripe, the mealy part has an agreeable acidity, like cream of tartar; it melts in the mouth and is very refreshing. The wood is exceedingly soft, and full of moisture, which it readily yields on pressure, affording a grateful beverage to travellers in the arid places where the trees grow. It is known by the name of Cream of Tartar Tree.

Barberry (*Berberis vulgaris*), a deciduous simple-leaved

spiny shrub of the Barberry family (Berberidaceæ), native of Britain and most parts of Europe, and of North America. * It attains the height of 6 to 8 feet. Its fruit is red, of an oblong form, growing in bunches like currants; it forms a pleasant acid preserve; the unripe ones are pickled as a substitute for capers. The bark is of a yellow colour, very astringent, and used for dyeing and tanning leather. It is a reputed cure for jaundice.

B. trifoliata, a native of Texas and New Mexico, has red fruits of a globose form, about the size of a pea. They are called currants by the inhabitants, and are used for making tarts.

B. pinnata, a native of the United States, from the Mississippi to the Pacific. The berries of this species are blue, and are called by the Mexicans "Linna amorilla." They are sweet and pleasant to the taste.

B. (Mahonia) glumacea, a low bushy shrub abundant throughout Oregon. The berries are blue, acid, but eatable. It is now extensively planted in this country as game cover.

The berries of *B. aristata*, an Indian species, native of Nepal, are dried in the sun like raisins. The bark of the root is reputed as a febrifuge, and is used in ophthalmia.

B. Lycium, also a native of Nepal, is highly extolled as an aperient and for ague. From the bark a medicinal extract is prepared, known as Rusot.

B. maderensis is a shrub 3 to 5 feet high, the old plants having several stems as thick as the wrist or arm. The ultimate branches strongly striated or ribbed and of a bright rich orange or orange chestnut colour. The wood is bright yellow, and is employed by the Funchal cabinetmakers. The common Barberry of this country is liable to be infested with a fungus called *Æcidium Berberidis*, at one time supposed to be the cause of the disease in wheat called rust, which led to the Barberry's being extirpated from hedgerows contiguous to wheat-fields. But the microscopical researches of Bauer show the Barberry and wheat fungus to be distinct species.

Barley (*Hordeum distichum* and *H. hexastichum*), annual corn grasses cultivated from remote antiquity in the temperate

regions of Europe, Asia, and Egypt, forming an important article of bread food. In this and other countries it undergoes a process to form malt, of which ale is made. Scotch and pearl barley is formed by the removal of the thin covering of barley grains, the latter being made hard by drying.

Barometz (*Cibotium barometz*), a fern of the tribe Dicksonia, native of China and Tartary. The fronds of this fern are bipinnate, and rise to the height of 10 to 14 feet, produced from a decumbent and progressing caudex, which is densely covered with long, light, brown, silky hairs (characteristic of the genus); when old, looking like wool, and when lying on the ground having the appearance of a wool-clad animal. The story told to early travellers led them to describe it as a plant of flesh and blood. The travellers' tale upon the subject is, that on an elevated plain of vast extent, in countries east of the Volga, grows a wonderful plant, with the shape and appearance of a lamb, having feet, head, and tail distinctly formed, and its skin covered with soft down. The lamb grows upon a stalk about 3 feet high; the part by which it is sustained being a kind of navel, it turns about and bends to the herbage which serves for its food, and when the grass fails it dries up and pines away. The real facts are that the caudex of this fern is decumbent, progressing in length a foot or more according to age, and 3 or more inches in diameter. Its woolly appearance has led it to be likened to a lamb, the native name for it being *Barometz*, and known by travellers as the Tartarian Lamb, and by others as *Agnus Scythicus*. To make the story plausible the natives turn the woolly stipes upside down, cutting away the fronds, leaving a portion of the lower part of the stipes, four of which serve as legs, and thus the resemblance to a woolly animal (such as a weasel) is complete. It has been long cultivated at Kew.

Barrel Tree. (*See* Bottle Tree.)

Barwood. (*See* Camwood.)

Bass Brooms. (*See* Piassaba.)

Bassorin. (*See* Salep.)

Bass-wood. (*See* Lime.)

Bast, a general name applied to the inner bark of many plants, used for making cord and mats. Bass, or as they are generally called, garden mats, are made from the bark of the lime tree (*Tilia europæa*) and are imported from Russia.

Bast, Cuba (*Paritium elatum*), a tree of the Mallow family (Malvaceæ), a native of Cuba and Jamaica. A slender-stemmed tree attaining the height of from 50 to 60 feet, with large, cordate, smooth green leaves. The timber is of a greenish colour, and is used in Jamaica in cabinet-work; but the most important part is its beautiful lace-like inner bark, which was originally employed for tying up bundles of real Havannah cigars. About thirty years ago it was largely imported into this country for garden purposes, but it has now fallen into disuse. In Jamaica it is called mountain mahoe. Other species of *Paritium* have tough bark, especially *P. tiliacum*, a native of tropical coasts, and abounding throughout the islands of the Pacific, where its bark is largely employed by the natives for making ropes and nets, and its light wood for canoes.

Batatas. (See Potato, Sweet.)

Bawchan Seeds, a name given in India to the seeds of *Psoralea corylifolia*, a herb of the Bean family (Leguminosæ), 2 feet high. The pods are small, flat and oval, or kidney-shaped, and are employed medicinally by the Indian doctors. They have an aromatic taste. They also yield an oil, and have been sent to this country for crushing.

Bay Tree, Poison. (See Anise Star.)

Bay Tree, Sweet. (See Laurel.)

Bdellium.—This Bible name has in modern times been applied to the resin produced by two distinct African plants. First, *Balsamodendrum africanum* (for which see Myrrh). The second is *Ceradia furcata*, a genus of the Composite family (Compositæ), native of the island of Schibon on the West Coast of Africa. It consists of several erect, gouty, forked stems, about a foot in height, bearing a few simple leaves on the top, and a few flowers similar to the common groundsel. It was first noticed by guano-collectors about forty years ago, and living

plants were introduced to Kew. A fragrant gum exudes from the stems, especially when wounded, which in burning emits a smell resembling that of myrrh.

Bead Trees (*Melia Azedarach*), the type of the Bead Tree family (Meliaceæ). It is considered to be a native of India, but it is more probable that it has migrated westward from China. It appears to have early become domesticated throughout Western Asia, Egypt, and the countries on both sides of the Mediterranean, also throughout the West Indies, South America, and the United States, where it is called the Pride of India. In the South of France, Spain, Portugal, Italy and Greece it is planted as an avenue tree. It attains the height of 40 to 50 feet, and has a dense head of branches terminated by compound winged finely-cut leaves; the flowers are in terminal loose spikes of a light-blue colour, having some resemblance to those of the common lilac. The fruit is about the size of a cherry, but more oblong, of a yellowish colour. It is pulpy, enclosing a hard nut, which is of a brown colour. These are bored and strung as beads and used as necklaces and rosaries, hence the name Bead Tree. There appear to be different opinions as to the value or otherwise of the pulp of the berry. Some writers assert that it is wholesome, and others that it is poisonous. In this country the tree is nearly hardy, plants having flowered in the open air at Kew. Other hard seeds are also used for rosaries and necklaces, one especially called the Necklace Tree, is *Ormosia dasycarpa*, a tree of the Bean family (Leguminosæ), native of the West Indies. The seeds of this, as also of *O. coccinea*, native of Guiana and Brazil, are slightly flat, oblong, of the size of peas, smooth, polished, and of a red colour, with a black spot at one end. 2. *Abrus precatorius*, a slender twining, wing-leaved shrub of the Bean family (Leguminosæ), originally a native of the East Indies, but early introduced into the West Indies, where it soon became naturalised, as it has in many tropical countries. Its seeds are like small peas, red, with a black spot. They are vulgarly called Crab's eyes. 3. *Leucaena glauca*, a tree of the Mimosa section of the Bean family (Legu-

minosæ), native of the West Indies and tropical America. It has become naturalised in the South of Europe and most warm countries. 4. *Adenanthera pavonina*, a tree of the Bean family (Leguminosæ), native of India; the seeds are of a bright-red colour (see Sandal-wood, Red). 5. *Erythrina Corallodendron*, has bright-red seeds (see Coral Tree). 6. *Cæsalpinia* (*Guilandina*) *Bonduc* and *C. Bonducella* (see Bonduc and Bonducella). 7. *Rhynchosia precatória*, a climbing shrub of the Bean family (Leguminosæ), native of Mexico. It has small, pretty, pea-like seeds, half black, half scarlet. 8. *Elæocarpus Ganitrus*, a large tree of the Lime Tree family (Tiliaceæ), native of India and the Malayan Islands. Its fruit is a drupe about the size of a plum, containing a hard corrugated nut, which is made into rosaries, bracelets, necklaces, and similar articles. There are many other seeds and fruits besides those enumerated that are used as beads for ornamental purposes, such, for instance, as the fruits of the Australian species of *Santalum* or *Fusanus*, and the very hard and bony seeds of *Coix lachryma*. (See Job's Tears.)

Bean, a general name for seeds enclosed in a bivalved pod, of which the pea, scarlet-runner bean, and garden bean, are familiar examples. The latter (*Faba vulgaris*) is an erect, wing-leaved annual, of the family to which it gives its trivial name, and of the natural family (Leguminosæ), of which there are two kinds. First, the Field Bean, extensively cultivated for feeding horses; second, the broad or Windsor Bean, cultivated in gardens.

Bean Caper (*Zygophyllum Fabago*), a desert plant of the Lignum Vitæ family (Zygophyllaceæ), 2 to 3 feet high, native of Syria, Egypt, and North Africa. It is a soft-leaved shrub, having the leaves in pairs. Its flower-buds are used as a substitute for capers.

Bearberry (*Arbutus Uva-ursi*), a low evergreen shrub of the Heath family (Ericaceæ), with small leaves, abounding in mountainous districts throughout Europe and North America. In this country it is found in Wales, and is abundant in the Highlands of Scotland. It has red berries, which afford food for

grouse, and in Sweden, Russia, and America for bears. The whole plant is astringent, and is used for tanning and dyeing.

Bear's Ear, a common English name for two distinct plants. First, the *Auricula* (which see). Second, *Saxifraga sarmentosa*, an evergreen herb of the Saxifrage family (Saxifragaceæ), native of China, introduced more than a hundred years ago. It derives its specific name *sarmentosa* from its producing long running stems on the ground, emitting oblong, roundish, serrated leaves at regular distances. It has become a favourite window pot plant. When placed in an elevated position the stems grow freely pendulous in the air, often a yard in length; producing the leaves at regular distances, and being above one another, the plant has been likened to sailors manning the rigging of a ship, and is called the Sailor Plant.

Bear's Grass. (*See* Adam's Needle.)

Beaver Tree. (*See* Magnolia.)

Bebeeru. (*See* Greenheart.)

Beech, Common (*Fagus sylvatica*), a lofty tree of the Oak family (Cupuliferæ), forming extensive forests in Armenia and the regions of the Caucasus, and also throughout the temperate countries of Europe. It is generally understood to be a native of this country, but some writers make out that it was not known before the Norman Conquest. It is common in our own woods, and is an ornamental tree when standing alone, attaining the height of 50 to 60 feet, and diameter of 3 to 4 feet, forming a round head of branches; the extreme ones being twiggy and drooping, often reaching the ground, and being thickly covered with simple, smooth, shining leaves, produces a dense shade in summer. Loudon calls the tree the Hercules and Adonis of our woods. Its timber, although not of great strength, is nevertheless of fine grain, smooth, and is employed for many domestic purposes, as for turnery and joinery, especially for bedsteads, chairs, etc. Its fruit is a three-sided, three-valved capsule, containing several triangular nuts called Mast. These nuts are a favourite food of hogs, and contain a useful oil, which is largely used as a salad oil in Germany. There are several

varieties with variously cut leaves, the most important being the purple and copper-coloured kinds, which form ornamental trees in shrubberies. 1. The Rusty-leaved Beech (*Fagus ferruginea*), a large tree, native of North America. In some parts of Nova Scotia the country for miles in extent is occupied by this beautiful tree, and in autumn large droves of hogs are driven out to feed upon the nuts. Its wood is somewhat of a reddish, rusty hue, and is employed for many purposes. 2. Evergreen Beech (*Fagus betuloides*), a large tree, native of Terra del Fuego. It has small leaves like birch, but firmer. It was first noticed by Sir Joseph Banks, in Captain Cook's first voyage. It is said to be the most southern large tree in the world. Its size principally depends on the place of growth. In sheltered valleys it attains a considerable height, with a diameter of 7 feet, while on the exposed heights of Hermit Island the branches are so compact and nearly flat on the ground that it can be walked over. 3. *Fagus antarctica*, also a large tree, native of Terra del Fuego, but differing from the preceding in the leaves being deciduous. These two last species were introduced to the Royal Gardens, Kew, in 1841, and great hopes were entertained that they would prove hardy and become useful and ornamental trees; but such proved not to be the case, for although a plant of *F. betuloides* grew in the open air for twenty years and attained the height of 8 feet, it nevertheless succumbed to the cold of January 1867. 4. *F. Cunninghamii*, a large tree, native of Tasmania; its wood has a brownish, satiny ground, with beautiful feathery cross veins, and makes a handsome wood for cabinet-work. It is known as Tasmanian Myrtle. 5. *F. fusca* and *F. Solandri*, large trees, natives of New Zealand. The woods are employed for many purposes. The latter is known by the name of White Birch.

Beech Fungus (*Cyttaria Darwinii*) is a globular, bright yellow fungus. When young, it is elastic and turgid, with a smooth surface, but when mature it shrinks, becomes tougher, and has its entire surface deeply pitted or honeycombed. It grows on the beech trees of the southern hemisphere in Terra

del Fuego in vast quantities on *Fagus antarctica*. It is collected in large quantities and eaten uncooked; it is mucilaginous and sweet, with a faint smell like that of a mushroom, and forms an important article of food to the natives. It also grows in Chili on a species of *Fagus*, and on *F. Cunninghamii* in Tasmania.

Beef-wood. (See She Oak.)

Beet, or Beetroot, thick fleshy-rooted herbs of the Goose-foot family (Chenopodiaceæ), of which there are many cultivated varieties, all of which are supposed to have originated from *Beta maritima*, common in some parts of the coasts of this country. Its broad leaves are used as spinach. Originally there were only two kinds cultivated in gardens, the Red Beet (*Beta vulgaris*) and the White Beet (*Beta cicla*). They are recorded to have been cultivated more than 300 years ago: the White Beet for the thick midrib of its leaves, which are cooked as asparagus; and the Red Beet for its fleshy roots, which, boiled or roasted, form a wholesome table vegetable, or they are pickled. Of *B. vulgaris* there are four special varieties, red, yellow, white, or pale green, and large rooted. The two first are, as already stated, cultivated for their culinary roots; the third, the white, also known by the names of Sicilian and Sugar Beet. For a number of years past this has been extensively cultivated in Germany and France, for the purpose of extracting sugar from its roots, which process commenced about 1830; and in 1850 in France alone there were 303 manufactories for making beetroot sugar, which now competes in the market with cane sugar. Besides pure sugar and molasses, a spirit is also distilled from the residue, also a considerable quantity of potash. Its cultivation in this country has not been found practicable. The fourth, or large-rooted kind, *B. vulgaris macrorrhiza*, well known as Mangel Wurtzel, is extensively cultivated in this country and on the Continent for feeding cattle.

Begonia, the name of an extensive genus, the type of the Begonia family (Begoniaceæ), consisting of succulent-stemmed herbaceous plants, erect or creeping, or fibrous or tuberous

rooted, with alternate, entire, lobed, palmate or digitate leaves, their base always oblique-cordate, smooth or villose, often red or blotched, of various colours; flowers unisexual, red or white, showy. Natives chiefly of tropical America and the East and West Indies. They possess no special properties, but of late years they have been patronised as showy flowering plants; and as they readily hybridise, fine varieties have been raised, especially from the tuberous-rooted sorts, which now form a conspicuous feature at horticultural exhibitions. In 1864 the Kew collection consisted of 18 varieties.

Belladonna. (*See* Nightshade.)

Belladonna Lily. (*See* Amaryllis.)

Belote. (*See* Oak.)

Bengal Quince. (*See* Bael Tree.)

Ben Oil. (*See* Horse-radish Tree.)

Bent Grass. (*See* Fiorin Grass.)

Benzoin, a gum-resin obtained from *Styrax Benzoin*, a tree of the *Styrax* family (*Styracæ*), native of Sumatra and other Malayan islands. Gum Benzoin is obtained by incisions made in the bark. This is a highly valuable perfume, and is used in the composition of incense, as well as in medicine, for pulmonary complaints. *S. punctatum*, a tree native of Veraguas in Central America, yields a gum which is obtained after the tree is cut down and allowed to remain several years on the ground, when the external part of its wood is removed, and the gum-resin found collected in greater or smaller masses. It is used as frankincense.

Bergamot, the name of a perfume extracted from the fruit of *Citrus Bergamia*, a shrub of the Orange family (*Aurantiacæ*), cultivated in France and Italy for its fruit.

Betel Leaf, or **Betel Pepper** (*Piper betel*), a climbing plant similar in habit of growth to the Black Pepper (*Piper nigrum*). It is cultivated throughout India, Malayan Peninsula and Islands, for the sake of its leaf, which is chewed with the Betel nut and lime, as above.

Betel Nut, also called Pinang (*Areca Catechu*), a native of

Cochin China, the Malayan Peninsula and Islands. It is a slender-stemmed lofty palm, with regular pinnate leaves and long linear leaflets. Its fruits are produced on an erect spadix; each fruit is about the size of a hen's egg, covered with a thick, fibrous rind, which envelopes a hard nut about the size of a nutmeg. The nut is cut up into pieces, and rolled up in a leaf of the Betel pepper, to which a little lime is added, and then chewed—a custom common to the whole of the Indians and Malayan races. It is said that many would forego their food rather than the use of the Betel Nut. All carry a box containing the nut, leaf, and lime, which may be compared to the snuff-box of other countries. The character of box varies according to the means of the owner, those of the nobles being of gold, and of higher dignitaries ornamented with diamonds. Shiploads of the nuts are yearly carried into countries where it is not cultivated. It is considered to stimulate the digestive organs. By its continual use the gums and mucous membrane of the mouth become a brick-red colour, the teeth crumble to a level with the gums, and when the teeth become worn out the victims die longing for another quid. Thus chewing the Betel Nut is somewhat similar in its effects to the chewing of tobacco.

Bhang. (*See* Hemp.)

Bigroot. (*See* Bitter-root, Californian.)

Bikh, or Bish. (*See* Aconite.)

Bilberry, or Blackberry (*Vaccinium Myrtillus*), **Whortleberry** (*V. uliginosum*), **Cowberry** (*V. Vitis-idea*), small shrubs of the Cranberry family (Vacciniaceæ). They occupy vast tracts in bogs and moorlands, and even the tops of mountains in Scotland, and throughout Europe and North America. Their berries are about the size of currants, the two first blue and the last red. They are somewhat austere, but are made into a preserve for tarts, etc., besides forming an article of food for many moorfowl.

Bindweed, a name applied to the different species of the genus *Convolvulus*, the type of the family Convolvulaceæ, of which there are many species. Two are natives of this country

—*C. arvensis*, common in cornfields and waste places, and *C. sepium*, known as Hedge Bindweed, which overruns bushes and hedges, well known for its conspicuous white flowers. A number of exotic species are cultivated in gardens for their showy flowers.

Birch, Black (*Betula nigra*), a tree of the Birch family (Betulaceæ), native of North America. Its timber is tolerably hard, and is used for many purposes. Its sap, with the allied species *B. lenta*, contains sugar.

Birch, Indian Paper (*Betula Bhojpattra*), native of Nepal and other parts of the Himalayas. Its bark is deemed sacred, and is used for burial piles; and in Kashmir children are clothed with it. It is also used for covering roofs, for writing paper, for packing, and for many other purposes.

Birch, Jamaica (*Bursera gummifera*), a tree of the Myrrh family (Burseraceæ), native of Jamaica, having brown bark like the Birch tree of Europe. The fruit yields a balsamic turpentine, and on wounding the bark a white liquor is obtained, which soon hardens, and is in no way different from Gum Elemi.

Birch, Paper (*Betula papyracea*), a native of North America. It has a very thick bark, which is taken off in large sheets, and by uniting them canoes are made, some large enough to carry a dozen persons. It is also made into shoe soles and domestic utensils.

Birch, White, of Europe (*Betula alba*).—The White Birch is a well-known, graceful tree, grown throughout the whole of Europe. In bleak, rocky situations it assumes the habit of a shrub. Its wood and bark are used for many domestic purposes. In Lapland bread is made from the bark; in Russia an oil is extracted from it, which is used in the preparation of Russian leather, and imparts the well-known scent to it. Its sap flows freely in the spring, and as it contains a quantity of sugar, it is fermented and forms a pleasant wine called Birch Wine.

Bird-lime. (See Holly.)

Bird's-nest Fern (*Neottopteris Nidus*, *Asplenium Nidus* of Linnæus), a simple fronded fern of the tribe Aspleniæ; its fronds

are produced round an acaulose axis, their bases overlapping each other, forming a cup like a bird's nest; it is widely distributed throughout tropical Asia and islands of the Pacific; it has large, broad, smooth fronds, which are surpassed in size only by *N. musæfolia*, which has the largest simple entire fronds of all ferns; it is described by a Penang correspondent in the following words:—"I saw two fine specimens of the bird's-nest fern; each had between forty and fifty perfect green leaves; the average length of the leaves was 6 feet, and from 1 foot to 14 inches across in the broadest part. They were growing on each side of the doorway of the mansion; when I was walking up to them I thought they were *American aloes*."

Birthworts, the common name for the species of *Aristolochia*, the type of the Birthwort family (Aristolochiaceæ), of which about 180 species are described, chiefly natives of tropical America, consisting of small trees, shrubs, and climbers, the latter often found growing with passion flowers and *Bigonias*, forming an interminable lacing of the forests, and causing them to appear as if the whole were tied together with ropes. Birthworts are remarkable for the oddity of their flowers, which consist of a tubular, generally bent calyx, and in some of the species one of the lobes forming a large, plain, and in some cases concave labellum, and in the latter terminated with a long tail (codicil), the whole of a dusky colour, and emitting a fetid odour. *A. cordata*, a species native of the regions of the Magdalena, according to Humboldt, has a large concave labellum, 4 feet in circumference, which the Indian children put on their heads as caps. *A. Goldieana*, a native of Western tropical Africa, has flowers quite as large. The plant has flowered recently at Kew. In tropical America, *Aristolochias* and other climbing plants are termed by the natives "guaco," and are held in high repute as a cure for snake bites and for charming snakes. This property is also said to be possessed by two European species—*A. longa* and *A. semper-virens*—natives of the South of Europe, and used by jugglers. The Virginian Snake-root (*A. serpentaria*) has also a similar

reputation. *A. siphon*, a native of North America, is quite hardy in this country. It is a strong-growing climber, and is curious for its bent, syphon-like flowers. *A. clematitis* is a perennial, native of this country, but rare.

Bish, an Indian poison. (*See* Aconite.)

Bitter Cup. (*See* Quassia.)

Bitter Oil, a name in India for an oil obtained from the fruit of *Calophyllum inophyllum*, a tree of the Gamboge family (Guttiferae) common in the tropical countries of Asia, including the islands of the Pacific, and being a tree of economical importance it consequently has many local names. It sometimes attains the height of 80 to 100 feet, and 12 feet in girth. In the Fiji and other islands it is a coast tree, its round fruits, with the square fruits of *Barringtonia*, the cone-like fruits of the sago-palm, and the large seeds of *Entada*, are found covering the sandy beaches. The fruit is the size of a walnut, and when ripe, of a reddish colour; it has a fleshy rind containing a hard-shelled seed enclosing an oily kernel from which the oil is expressed, which is of a green colour, and is highly valued by the natives for medical purposes in the countries where it is produced. In Fiji it is called Dilo, and is used by the natives as a substitute for cocoa-nut oil for anointing their bodies. In Tahiti and other islands it is called Tamanu. A gum-resin exudes from the bark of the tree, which is one of the kinds of tacamahaca gums of commerce. The wood is firm and hard, and is used for shipbuilding, making canoes, and other purposes.

Bitter-root, Californian, also called Bigroot (*Echinocystis fabacea*), and by some called *Megarrhiza californica*, a genus of the Gourd family (Cucurbitaceae). *E. fabacea* has a fleshy, globose tuberous root, which varies in size according to age, some weighing 50 lbs.; from the centre rise several slender straggling stems of a whitish colour, ultimately producing leaves and tendrils; fruit globose, spiny, the size of an orange or apple, the root is intensely bitter, and is held in high repute, especially for dyspepsia and numerous other diseases.

Bitter-root, Canadian (*Lewisia rediviva*), a remarkable

plant of the Purslane family (Portulacæ). It is a native of North America from Canada to Oregon. It has long, fleshy tap roots, about the thickness of young radishes, producing a rosette of succulent leaves, from the centre of which rises a brilliant pink flower that opens only during sunshine, and, with the leaves, is of short duration. The root is white internally, almost entirely composed of starch, and might with propriety be called starch-root. It forms an article of food to the Indians. In preparing the root, the cuticle is removed, the root is then cut into small pieces, steeped in water, and then boiled, when it swells to five or six times its size, and resembles a jelly-like substance. It is much valued by Indians as well as by Europeans, who consider it a wholesome food. It is, however, very expensive, as it takes a long time to collect a sackful; the Indians trade in it by handfuls, and charge a high price. It received the specific name *rediviva* on account of the tenacity of life in the roots; instances have been recorded of its having flowered after having been in the herbarium two, and one at Kew, three years. In Oregon the Indians call it Spaetlum.

Bitter-root, Natal (*Gerrardanthus macrorhiza*).—This is also one of the Gourd family (Cucurbitacæ), and has tuberous roots 2 to 3 feet in diameter and 1 to 2 feet thick, similar to the preceding; it produces slender stems borne by tendrils; its leaves are hastate; it is intensely bitter, and used by the natives in medicine.

Bitter-sweet (*Solanum Dulcamara*), a slender-stemmed, straggling plant of the Nightshade family (Solanacæ) growing abundantly in hedges, which in autumn it adorns with its bunches of beautiful red berries, that have the appearance of currants, and being sweet and tempting are frequently eaten by children, to whom serious consequences have often occurred. It is recorded that thirty berries killed a dog in three hours, and fatal instances are given of children having died from eating them, which shows the necessity of guarding children against them. A great number of virtues are ascribed to this plant, even as far back as the time of Theophrastus, who called it *Vitis*

sylvestris. It is still in great repute with rustic, as well as regular practitioners.

Blackberry. (*See* Bramble.)

Black-boy Trees. (*See* Grass Gum Tree.)

Black Drink of the Indians (*Ilex vomitoria*), a small tree of the Holly family (Aquifoliaceæ), native of the coast of the Southern States of North America. It is in great repute, and is reckoned a holy plant by the North American Indians. Of the leaves slightly scorched they make the black drink used during their religious rites and solemn councils to clear the head and stomach. Yearly excursions of the Indians were made at one time to the Atlantic coast to collect the plant; but civilisation has now changed all this, and the White Man has taken the place of the Indian.

Black Maire, a name in New Zealand for *Olea Cunninghamii*, a tree of the Olive family (Oleaceæ), 40 to 50 feet high; wood dark-coloured, extremely hard, close-grained, and durable.

Blackthorn. (*See* Sloe.)

Blackwood, also called Indian Rosewood (*Dalbergia latifolia*), a magnificent wing-leaved tree of the Bean family (Leguminosæ), native of the East Indies. It is highly valued for its timber, the finest and most expensive furniture being made of it. Its variety *Sissoides*, together with *D. Sissoo*, natives of India, are also called Blackwood and Rosewood. They are hard-wooded trees, and the timber is employed for railway-sleepers and gun-carriages. *Acacia melanoxylon* is also called Blackwood in Australia.

Blacking Plant (*Hibiscus-Rosa-sinensis*), a shrub or small tree of the Mallow family (Malvaceæ), native of China, a showy plant in hothouses, having single and double red and yellow flowers. The red when bruised become black, and are then used for colouring the eyebrows and blacking shoes.

Bladder-green. (*See* Blackthorn.)

Bladder Nut (*Staphylea*), a genus typical of the small family Staphyleaceæ, represented in the gardens of this country by *S. pinnata*, a native of Central and Eastern Europe, and *S. triflo-*

liata, a native of North America; shrubs 3 to 4 feet high, grown in shrubberies, conspicuous in autumn by their bladder-like fruit, enclosing a nut, which is oily and purgative.

Blaeberry. (*See* Bilberry.)

Blewits, a name in the West and other parts of England for *Agaricus personatus*, a wholesome and delicious *Agaric* of the mushroom group of fungi, known by the blue colour on the upper part of the stem, from which it takes its name. There are, however, some doubts as to its wholesomeness when gathered under certain conditions, as to its age, etc.

Blight. (*See* Smut.)

Blimbing, the name in India for the fruit of *Averrhoa Bilimbi*, a small tree of the Oxalis family (Oxalidaceæ). It attains the height of from 20 to 30 feet, having winged leaves, which are slightly sensitive on being shaken. It is cultivated in India and other countries for its fruit, which is oblong and pulpy, about $2\frac{1}{2}$ inches long and 1 inch across, and of a yellowish colour. The Carambola (*A. Carambola*) is a very similar tree to the above; its fruit is about the size of a hen's egg, with three prominent ridges or angles, the flesh is soft, like a plum, exceedingly juicy and refreshing. The fruits of both species are used raw, preserved, or pickled, and the flowers are made into a conserve.

Bloodberry (*Rivina humilis*), a small shrub of the family Phytolaccaceæ, with soft leaves, native of the West Indies. It is an old inhabitant in the hothouses of this country. It has spikes of white flowers, which are followed by a bunch of small red berries, the juice of which is like blood, and is used by the ladies of South America as rouge.

Blood Flower (*Hæmanthus*), an extensive genus of the Amaryllis family (Amaryllidaceæ), natives principally of South Africa, and cultivated in this country as showy garden plants. *H. toxicaria* is poisonous, and is used by the natives to poison their arrows. *H. multiflorus* and *H. punicea* have showy red flowers, closely packed, the stamens forming a flat surface resembling a painter's dusting brush.

Blood Plum, a name in the Nupè district of the River Niger for the fruit of *Hæmatostaphis Barteri*, a small tree of the Mango family (Anacardiaceæ). The fruits are about the size of small olives, borne in bunches something like grapes. They are acid and edible.

Bloodwood, Indian (*Lagerstrœmia Reginæ*), a large tree of the Henna family (Lythraceæ). It is a native of the Peninsula and other parts of India and Burmah. Its wood is of a blood-red colour, and being very durable in water it is much valued for boat and ship building. The root is prescribed by Indian doctors in cases where an astringent is required. It is called Jarool by the natives. *L. indica* is a native of China, long ago introduced into this country. It is a beautiful flowering shrub in the greenhouse, and with protection against a wall is sufficiently hardy to stand moderate winters and flower in the open air.

Bloodwood, Jamaica (*Gordonia hæmatoxylon*), a small tree of the Camellia family (Ternstroëmiaceæ).

Bloodwood, Norfolk Island (*Baloghia lucida*), a small tree of the Spurgewort family (Euphorbiaceæ). It attains the height of 20 to 30 feet; it has opposite entire, oblong leaves, which, with the branches, on being cut, emits a red or blood-like fluid used as a marking paint.

Bloodwood, Victoria (*Eucalyptus corymbosa*), a tree of the Myrtle family (Myrtaceæ).

Bloodwort, a name in North America for *Sanguinaria canadensis*, a pretty, herbaceous plant of the Poppy family (Papaveraceæ), not more than 6 inches high, producing showy white flowers early in the spring. It has thick branching roots, which yield a yellow pigment, used as a dye; also by the Indians to colour their bodies, and for rude paintings.

Bluebell. (See Hyacinth and Harebell.)

Bluebottle (*Centaurea Cyanus*), an annual of the Composite family (Compositæ), common in cornfields, where its pretty blue flowers contrast with the scarlet poppy. *C. nigra*, black knapweed, and *C. scabiosa*, greater knapweed, are also cornfield pests.

Bog Myrtle. (*See* Gale.)

Bonduc and **Bonducella**, two species of *Caesalpinia* (*Guilandina*), a genus of the *Caesalpinia* section of the Bean family (Leguminosæ). They are climbers, having hard-wooded, prickly stems and leaves, which are bipinnate, extending to a considerable length, forming entangling thickets in many parts of the sea-coasts within the tropics, their wide dispersion being due to the nature of the seeds, which are about the size of small marbles, and are contained in prickly, flattened pods, 2 to 3 inches in length. They are so hard as to require a heavy stroke of a stone or hammer to break them. From this and the fact of the plants growing close to the shore many of the pods are cast into the sea, and wafted by currents on to distant shores. By the heat of the sun the shells ultimately crack, and the embryos thus relieved commence growth, thus establishing themselves in fresh localities. They are distinguished by their seeds, those of *C. Bonduc* being yellow, and those of *C. Bonducella* gray, or sometimes with an inclination to a reddish tint. They are known by the name of nicker nuts.

Bonnace or **Burnnose Tree**, a name in Jamaica for *Daphne tinifolia*, a small tree of the Spurge Laurel family (Thymelacææ). It has a very tough fibrous bark, and is used for many domestic purposes.

Bonnets and **Hats.** (*See* Straw.)

Borage (*Borago officinalis*), an annual of the Borage family (Boraginacææ), a native of England, growing in neglected places. It attains the height of two or three feet, having very rough leaves and pretty blue flowers. It is grown in gardens, and used for making a cooling drink called Cool Tankard. Its famed virtues for other purposes are, however, much more ideal than real.

Borecole. (*See* Cabbage.)

Bottle Brush Flowers, a name given to the flowers of *Melaleuca hypericifolia*, a plant of the Myrtle family (Myrtacææ), native of New South Wales. The flowers are closely produced

on a spike, and have long projecting straight stamens, which impart to it the appearance of a bottle brush. The flowers of several species of *Callistemon*, a genus of the same family, are also so called.

Bottle Gourd (*Lagenaria vulgaris*), a climbing plant of the Gourd family (Cucurbitaceæ). This is very common throughout the tropics and sub-tropics of both hemispheres, and has been introduced into the West Indies. Its fruit, which is sometimes nearly 6 feet long, is shaped like a bottle, and often used as such. The Club Gourd is a variety of this, but more tapering in the form of a club.

Bottle Tree (*Sterculia* [*Delabechea*] *rupestris*), a tree of the Sterculia family (Sterculiaceæ), native of North-East Australia. It is allied to the Gouty stem tree (*Adansonia Gregorii*), noticed under Baobab, being thickened below, tapering upwards or often swollen in the middle to the extent of 30 or 40 feet in circumference, with an apparently small tree growing out of its apex, so that it has been compared to the neck of a bottle. The gouty stem is soft and porous, and contains much mucilaginous gum, which is readily obtained by pressure, and is used as an article of food by the natives. It is also called Barrell Tree.

Box-berry. (*See* Shallon.)

Box Thorn (*Lycium barbarum*), a twiggy rambling shrub of the Nightshade family (Solanaceæ), of rapid growth, native of countries bordering on the Mediterranean. It is often seen covering arbours in cottage gardens in this country. Its leaves resemble those of the Chinese tea tree, which led to its being brought into notice about one hundred years ago by the then Duke of Argyle as a substitute for tea, for which reason it received the name of the Duke of Argyle's tea tree.

Box Trees.—There are several different kinds of trees known by this name, the first and most important being *Buxus sempervirens*, a small evergreen tree of the Spurgewort family (Euphorbiaceæ), native of Europe and the temperate countries of Asia, supposed to be indigenous in this country on Box-hill, in Surrey. It attains the height of from 10 to 30

feet, and has a stem 8 or 10 inches in diameter. It has small bright, shining leaves, and inconspicuous flowers, male and female, separate on the same plant. It is extensively planted as an ornamental shrub. The box-edgings (so called) of garden walks are formed of a dwarf variety of this species. An allied species is *B. Balearica*, a native of the regions of the Mediterranean, and derives its specific name from the Balearic Islands; it has larger leaves, and altogether a stouter-looking tree. It is not so common in gardens as *B. sempervirens*. The wood of the Box Tree is hard and close-grained, takes a fine polish, and is valued for wood-engraving, turnery, making mathematical instruments, etc. The chief supply comes from the Russian forests in the Caucasus.

Box Tree, New South Wales (*Pittosporum undulatum*), a tree of the Pittosporad family (Pittosporaceæ), native of New South Wales, attaining the height of 70 to 80 feet. Its wood is somewhat similar to the common boxwood. It has been introduced to the Azores, where it protects the orange trees from wind, as it withstands the highest gales.

Box Tree, Tasmanian (*Bursaria spinosa*), a spiny, bushy tree belonging to the same family as the preceding, native of Tasmania. It attains the height of 25 feet. Its wood is hard, with a grain similar to that of the common box tree. American boxwood is furnished by *Cornus florida*, and West Indian by *Tecoma pentaphylla*.

Bracelet-wood, a name in the West Indies for *Jacquinia armillaris*, a small tree of the Myrsine family (Myrsinaceæ). It is a close-headed tree, with verticillate branches, thickly furnished with obtuse, cuneiform, erect, firm leaves; it produces numerous reddish flowers; its seeds are yellow and brown according to age, and, being hard, are made into bracelets.

Brake and **Bracken**, common names for *Pteris aquilina*, also well known by the name of Fern, growing abundantly in parks, open glades, woods, and roadsides in this country, and occupying vast tracts in all temperate parts of the world and on elevated regions in the tropics—a true cosmopolitan. It

spreads rapidly by its underground running stems, which produce numerous winged herbaceous stems (called fronds in botany), which vary in height from 3 to 6 feet. In autumn these are cut and dried, and used for many domestic purposes. The underground stems contain a quantity of mucilage and starch, which, in some parts of Europe and Northern countries, are prepared by washing and pounding, and are mixed with meal to make bread in times of scarcity; even in this country attempts have several times been made to bring the plant into use as a food, recently by Dr. Clark, who considered it a wholesome table vegetable when young and blanched like asparagus, but its daily use for a month proved it to be astringent. In the southern hemisphere it is represented by what some botanists term a distinct species, namely, *P. esculenta*, which originally formed a considerable article of food to the natives of Australia, New Zealand, and other islands of the Pacific. The colonisation of these countries and the introduction of corn and potatoes will no doubt cause it to be discarded as an article of food. In some parts of this country, especially in Wales, the fern is burnt in large quantities, and the ashes, which contain a considerable quantity of alkali, mixed with water and made into balls, are sold in the towns as a substitute for soap, under the name of ash-balls. The ashes are also used in glass-making. On account of ferns not having visible flowers or seed, much superstition was attached to them by the ancients, and in Shakespeare's time they were spoken of as "uncanny and evil." Butler says:—

"Fern, that vile, unuseful weed
That grows equivocably without seed."

It however appears, according to Shakespeare's play of *Henry IV.*, that ferns were then considered to have seed. We read:—

"We have the receipt of fern seed—
We walk invisible."

This fern seed is supposed to become visible on St. John's Eve, and it was believed to be under the special protection of

the Queen of the Fairies. It was considered that those who possessed fern seed could make themselves invisible at pleasure. A more practical notion of the supposed power of ferns is, that the burning of it brings down rain, of which the following is a curious illustration. In a volume containing a miscellaneous collection by Dr. Richard Pocock, in the British Museum, is the copy of a letter written by Philip Herbert, third Earl of Pembroke, Lord Chamberlain, to the Sheriff of Staffordshire. It is as follows :—" Sir—His Majesty, taking notice that the burning of Ferne doth draw down rain, and being desirous that the country and himself may enjoy fair weather as long as he remains in these parts, his Majesty has commanded me to write to you to cause all burning of Fern to be forborne until his Majesty be past the country. Wherein, not doubting but the consideration of their own interest, as well as of his Majesty's, will invite the country to a ready observance of this his Majesty's commands, I rest, your very loving friend, PEMBROKE AND MONTGOMERY."

Bramble, or **Blackberry** (*Rubus fruticosus*), a trailing prickly shrub of the Rose family (Rosaceæ), native of this country, found growing in hedges and waste places. The fruits are black, and are used for puddings, tarts, and preserves, as well as for making and colouring wines, both in France and England. They are generally considered astringent. The long rods and twigs are used for fixing thatch and for other domestic purposes. Many other species of *Rubus* of low growth extend to the limits of vegetable life in the northern hemisphere. The fruit of several such as Dewberry (*Rubus cæsius*), Cloudberry (*R. Chamæmorus*), are used in Northern countries for making wine. They also furnish food for moor and other wild fowl.

Bran, one of the coarser products of wheat, which with pollards is separated in the process of milling in the preparation of flour, the latter forming an important article of food to the peasants of Italy.

Brank. (See Buckwheat.)

Brazil or **Braziletto Wood** (*Cesalpinia echinata*), a rugged

growing tree of the Bean family (Leguminosæ), about 20 or 30 feet high, with prickly compound winged leaves. It is a native of Brazil; the wood is hard, takes a fine polish, and is imported to this country for cabinet-work, also for dyeing.

Brazil Nut (*Bertholletia excelsa*), a tree of the Monkey Pot section of the Myrtle family (Myrtaceæ), attaining the height of 100 to 150 feet, and about 3 or 4 feet in diameter. The leaves are broad, smooth, and nearly 2 feet in length. The fruit is produced on the upper branches, and when fully grown is in the form of a perfect ball, from 4 to 6 inches in diameter; it consists of a woody shell containing a number of closely-packed three-sided rough seeds (nuts) about an inch and a half in length. When ripe the fruits fall from the tree and are collected by troops of Indians, who split them open to obtain the nuts. The tree is a native of Guiana, Venezuela, and Brazil, forming large forests on the banks of the Rio Negro and the Amazon, and likewise about Esmeraldos on the Orinoco, where the natives call it Juvia. The largest export of Brazil nuts is from Para; as many as 50,000 to 90,000 bushels are annually sent to this country alone. A bland oil is obtained by pressure, which is used by watchmakers and artists.

Bread, native of Australia (*Mylitta australis*), a curious fungus, forming large irregularly globose masses, which in its early stage is soft, but afterwards becomes hard and horny. It is eaten by the natives.

Bread-fruit (*Artocarpus incisa*), a tree of the Bread-fruit family (Artocarpaceæ), native of Otaheite and other islands of the Pacific Ocean, attaining the height of 20 to 30 feet, having spreading branches and rough lobed leaves. Its fruit (so called) consists of a spongy receptacle of a globose or oblong form, like a large melon about a foot in length; it is marked on the exterior with a diamond pattern, each mark indicating the place of a female flower. The true fruits consist of nuts embedded in the mass, but are seldom produced in trees under cultivation. Bread-fruit, with the cocoa-nut and banana, comprises the principal part of the food of the natives of the Pacific Islands.

It is of a white and firm texture, something like wheaten bread, and not unpleasant to eat. The bark is very tough, and when beaten out forms the whitest and finest native cloth.

The Bread-fruit tree was first brought into notice through the voyages of Captain Cook, and its fame as a food-plant led the British Government to deem it worthy of being naturalised in the West Indies. Accordingly, in 1787 the ship *Bounty*, commanded by Captain Bligh, accompanied by David Nelson, a gardener (who had accompanied Captain Cook in his third voyage), was despatched to Otaheite to obtain a cargo of young trees. This being accomplished, the ship sailed from Otaheite with every prospect of the undertaking terminating successfully; but they had not long left Otaheite when a mutiny broke out on board, and the captain, Nelson, and other officers, and members of the crew who would not join the mutineers, were put in an open boat and set adrift in mid-ocean, the nearest place where European aid could be obtained being the Island of Timor, 3618 miles distant, which place they reached after enduring great fatigue and hardship, from the effects of which Nelson did not recover, having died there in July 1789. On Captain Bligh reaching England he was again despatched on the same mission in the ship *Providence*, having with him Christopher Smith, a gardener from Kew, the expedition this time proving successful; and in 1793 Bread-fruit trees were flourishing in Jamaica and other West Indian Islands, and soon became common in all tropical countries favourable to their growth.

Bread-fruit, African (*Treculia africana*), a tree of the Bread-fruit family (Artocarpaceæ), native of Western tropical Africa. The fruit is about a foot in diameter, having numerous nuts buried in a spongy substance; these nuts are ground into meal and eaten by the natives.

Bread-nut Tree (*Brosimum alicastrum*), a large tree of the Bread-fruit family (Artocarpaceæ), native of the West Indies. It has lance-shaped leaves and fruit about the size of a plum, containing one nut-seed, which when roasted is eatable. The wood has a fine grain like mahogany.

Bread-root. (*See* Prairie Turnip.)

Briar-root, a popular name for the roots, burrs, and knots of *Erica arborea*, a shrub or small tree of the Heath family (Ericaceæ). It is found in many parts of Europe, as well as in Algeria. The burrs, roots, and knots are imported into this country in large quantities for making pipes, which are sold as Briar-root pipes, the common name being a corruption of the French *Bruyère*.

Brinjal, or **Bringal**. (*See* Egg-plant.)

Brocoli. (*See* Cabbage.)

Broom (*Cytisus scoparius*), a shrub or small tree of the Bean family (Leguminosæ) with twiggy, flexible almost leafless branches. It is a native of Britain and throughout Europe, growing on heaths and uncultivated ground. Its showy yellow flowers make it a general favourite. In Spain and France it attains the size of a tree, and its wood, which is hard, is highly valued for veneering and cabinet-work. The fibre of the bark is very strong, and capable of being used for many purposes; its twiggy branches are extensively used for making brooms.

A closely-allied plant, *Spartium junceum*, a native of Southern Europe, has more slender and cord-like branches than *C. scoparius*, and they are used for making baskets and fastening the vines in the vineyards. In Italy and the South of France a cloth is made from the fibre, which is obtained by tying the rush-like twigs into bundles, and exposing them to the sun for some time to wither; they are then beaten with a mallet, and placed in water, where they are allowed to remain eight or nine days, after which they are washed; this operation loosens the fibre in the bark, and after drying it is combed and dressed in a similar manner to that which obtains in the preparation of flax.

The Broom is the badge of the Plantagenets, adopted by Henry II., and borne by the rest of his race; *Planta genesta* giving the family title of Plantagenet figured on the seal of Richard I.

Broom Corn, a name in the United States for *Sorghum saccharatum*, an annual grass, producing a dense head of long

spikelets, bearing numerous small corn-grains, which after being removed the spikelets become hard and rigid, and are used for making house brooms. For this purpose it is extensively cultivated in parts of the United States, especially Ohio. Great quantities of the spikelets and broom handles are imported to this country,

Broom Rape, a name for a certain class of plants growing on the roots of others, and therefore termed parasitical; the typical genus of Broom Rapes is *Orobanche*. Of this genus, which gives the name to the family (Orobanchaceæ), six species are described as being natives of Britain. The most conspicuous is *O. major*, which grows upon the roots of broom and furze; it consists of a fleshy stem a foot or more in height, of a brownish yellow colour; instead of leaves it is furnished with numerous pointed scales, terminated by a head of monopetalous bilabiate flowers. The other species are similar in habit, but of less size, and are found on the roots of furze, flax, clover, wild carrot, etc. They possess no special properties, but are troublesome weeds, especially those growing on clover and flax, doing irreparable mischief.

Brucine. (*See* Nux Vomica.)

Brush Grass (*Andropogon gryllus*), a strong growing perennial grass, native of the South of Europe. It has stiff wiry roots, which are largely imported into this country for making toilet and other brushes.

Brussels Sprout. (*See* Cabbage.)

Bryony (*Bryonia dioica*), a common British plant of the Gourd family (Cucurbitaceæ), climbing over hedges and adorning them with its beautiful berries in autumn, which are highly poisonous. The plant has a thick, long, fleshy root, often double, or made to grow so by herb collectors in order to convert them into the form of a man, these are called Mandrakes, and are occasionally to be obtained as curiosities. It is a dangerous purgative.

Bryony, Black (*Tamus communis*), a tuberous-rooted herb of the Yam family (Dioscoreaceæ), native of roadsides and waste

places in this country. It has a hard fleshy tuberous root-stalk 2 to 3 inches in diameter, and the greater part above ground, from the centre of which rise annually slender twining stems, rambling over hedges and bushes, furnished with heart-shaped leaves. The flowers are small, inconspicuous, and dice-cious; its fruit is a black berry. Its fleshy slimy roots were at one time in repute with herb doctors for making plasters. The fruit is used as a remedy for chilblains.

Buchu, or **Bucku**, a name given by the Hottentots to *Barosma crenulata*, *B. crenata*, and *B. serratifolia*, slender branched shrubs with small alternate leaves, and pretty pink or white flowers of the Rue family (Rutaceæ), natives of the Cape of Good Hope. The leaves are highly esteemed by the Hottentots; mixed with brandy called Buchu brandy, it is a favourite medicine, taken internally for many complaints, and applied externally for rheumatism; they also make a powder with the leaves, and mix it with grease to anoint their bodies, which operation forms an important part of their toilet. The leaves are full of pellucid oil-cells, and have a strong fragrant odour; they are frequently prescribed by regular practitioners in this country, especially in diuretic affections, and for promoting perspiration.

Buckbean (*Menyanthes trifoliata*), a trailing herb of the Gentian family (Gentianaceæ); it is one of our most beautiful native plants, growing abundantly in marshy places and by the sides of streams. It possesses strong medicinal properties, the leaves being extremely bitter. An infusion of them is a favourite domestic remedy in rheumatism, and is employed by regular practitioners in fevers. They have been used as a substitute for hops; but they give bitterness without any accompanying aroma.

Buckthorn, represented in this country by several species of the genus *Rhamnus*, typical of the Buckthorn family (Rhamnaceæ). With the exception of *R. Alaternus*, they are rude, stiff-branched, somewhat spiny shrubs, seldom exceeding 10 feet in height.

R. infectorius, native of Southern Europe and Western Asia, is important on account of its berries, which are about the size of peas, and black when ripe; gathered green, they constitute an important dye, much used by calico printers. In commerce they are known by the name of Yellow or Persian berries; the principal importations come from ports in the Black Sea, chiefly from Trebizonde.

R. catharticus, the Purging Buckthorn, is indigenous to Britain. It is a stiff-branched shrub, 5 to 10 feet high. It has deciduous, yellowish green, egg-shaped leaves, toothed along the edges, and dense clusters of yellowish green flowers, which produce a crop of little shining black berries about the size of peas; they were formerly used in medicine as a purgative, and are still prescribed by herb doctors; Syrup of Buckthorn is, however, a medicine in the British Pharmacopœia. The pigment called Sap-green, or Bladder-green, is prepared by mixing the fresh juice of the ripe berries with alum, and evaporating to dryness; it is in common use by water-colour painters; the juice of the unripe berries is yellow, and used by map-makers. The bark yields a beautiful yellow dye, and, like the berries, is strongly purgative, and excites vomiting.

R. Frangula, called the Alder Buckthorn, a stiff branching shrub 6 to 8 feet high, or sometimes with a single stem, assuming the character of a small tree, native of this country, and, with the last, growing in woods and uncultivated grounds. The bark of the branches and roots contain a yellow dye. Its greatest importance is that it makes the best charcoal, used for the manufacture of the finest gunpowder, and is known to the gunpowder makers as Dogwood.

R. Alaternus, an evergreen shrub, with smooth shining leaves, sometimes forming a small tree, attaining the height of 10 to 12 feet, native of Southern Europe and Northern Africa. It has been introduced and cultivated in this country as an ornamental shrub since the beginning of the seventeenth century.

R. utilis and *R. chlorophorus* are shrubs or small trees, natives of China; they yield the fine green dye for silk, called "Lo-kao,"

which is extensively imported into this country and France in the form of cakes, called Chinese Green Indigo; it imparts beautiful shades of green to silk. These two species have, within the last twenty years, been introduced to this country, but are not sufficiently hardy to stand our severe winters without protection; they, however, might do so in the southern countries, and the south of Ireland.

Buckthorn, Sea (*Hippophaë rhamnoides*), a bushy, spiny branched shrub, 2 to 4 feet high, of the Oleaster family (Elaeagnaceæ), with linear, alternate leaves, green above and silvery underneath. The fruit forms a succulent berry; it is acrid and poisonous. Native of the sea-shores of this country.

Buckwheat, or Brank (*Fagopyrum esculentum*), an annual plant of the Rhubarb family (Polygonaceæ), supposed to be a native of Central Asia, where it is extensively cultivated, but it has now become widely spread in most countries. It is largely cultivated in France, Holland, and the United States for its seeds, which are ground into meal and made into thin cakes. In this country its seeds are chiefly used for feeding pheasants. The husks are largely used for packing what are termed Dutch bulbs.

Buffalo Berry (*Shepherdia argentea*), a low bush of the Oleaster family (Elaeagnaceæ), with pretty silvery lance-shaped leaves. It is found abundantly in the United States and many parts of North America. The berries are about the size of currants, and form a considerable portion of food to the Utah Indians.

Buffalo Grass (*Tripsacum dactyloides*), a strong-growing grass, native of North America, from Canada to Texas, supplying a large proportion of the food of wild buffaloes. About fifty years ago it came into special notice in this country under the name of Gama Grass; highly extolled for fattening cattle and making the flesh rich. It was introduced to Kew by Tradescant in 1640; it is scarcely hardy, being much injured in severe winters, therefore it was not patronised as a fodder grass.

Bugwort (*Cimicifuga fetida*), a perennial of the Buttercup

family (Ranunculaceæ), native of Eastern Europe and Siberia. It is called Stinking Bugwort, and is used for destroying insects, particularly the pests from which it takes its name.

Bukkum-wood. (*See* Sappan-wood.)

Bull Kelp, a seaweed common on the south coast of Australia, used as a food by the aboriginal natives. The party sent to King's Island to bury the dead of the ill-fated ship *Catarique*, fell short of provisions, and lived upon this weed for several days. It has been described as exceedingly nutritious and fattening.

Bullace (*Prunus insititia*), a spiny shrub of the Plum family (Drupaceæ), native of this country, growing in hedges and waste places. The fruit is larger than that of the sloe, and is palatable; there is a variety with white berries, sold as white damsons.

Bullock's Heart (*Anona reticulata*). (*See* Custard Apple.)

Bully Tree (*Bumelia nigra*), a large tree of the Star Apple family (Sapotaceæ), native of Jamaica, and indigenous to Barbadoes. Its fruit is clammy, but of a sweet agreeable flavour. It is also called Bully Berry. The name Bully Tree is sometimes applied to *Sapota sideroxylon* and *Myrsine læta*.

Bulrush, Common (*Scirpus lacustris*), a marsh plant of the Sedge family (Cyperaceæ), it has cylindrical stems like the common rush, but stouter and taller, often attaining the height of from 4 to 6 feet. It grows abundantly in ditches and on banks of rivers in this and other countries of Europe and in Western Asia. It is extensively used for making mats and ropes, but more especially for chair-bottoms and hassocks. In this country in early times it was called Pool-rush. In California it is called Teele, and used for paper-making. *Typha latifolia* is by some called Bulrush. (*See* Mace-reed.)

Bulrush of the Nile. (*See* Papyrus.)

Bunkuss, a name in India for *Spodiopogon angustifolius*, a grass of the Andropogon section of the Grass family (Graminaceæ). It is used in North-West India for making ropes, also shoes, mats, and other domestic utensils.

Bunt. (*See Smut.*)

Bunya Bunya. (*See Araucaria.*)

Burdock (*Arctium Lappa*), a large rough-leaved perennial of the Composite family (Compositæ), common in this country, growing on roadsides and waste places; it is a troublesome weed in cultivated grounds. It has no special properties, but is interesting for its spiny flower-heads, the burs adhering to clothes, and affording a source to schoolboys and others of playing practical jokes.

Burgundy Pitch. (*See Spruce Fir.*)

Burnet (*Poterium [Sanguisorba] officinale*), a perennial herb with winged leaves, belonging to the Burnet family (Sanguisorbaceæ), producing branching flower-stems 3 feet high, and bearing oblong heads of reddish flowers. A small-sized variety is called the Lesser Burnet; they are natives of this country, and are grown in gardens for their leaves, which are used in soups, salads, and for cooling drinks.

Burweed (*Xanthium spinosum*), a rude-growing rough-leaved annual of the Composite family (Compositæ), native of Southern Europe; it has been introduced into the Cape of Good Hope, and has become a serious evil to the sheep farmers by its prickles becoming fixed in the wool of the sheep. An Act has been passed by the Cape Parliament for its extirpation. In the United States *Xanthium strumarium* is in its young state often eaten by cattle; its effect is to paralyse the heart, inducing torpor without pain or struggle.

Bush Apple, a name in Australia for the fruit of *Achras australis*, a small tree of the Star Apple family (Sapotaceæ), native of extra-tropical Australia.

Bussu.—This is a name given by the Indians to *Manicaria saccifera*, a palm, native of the swamps of the Orinoco, also found in Trinidad. It is one of the few palms with entire leaves. The stem is stout and generally crooked, attaining the height of 15 or more feet, the leaves which rise from its summit being 20 to 30 feet in length and 4 to 5 in width; when old the tops become split and ragged, but are stiff and stand

erect. The flowers are produced on a simple spadix 3 or 4 feet long, enclosed in a tough, brown spathe of an interwoven fibrous character, of which bags, caps, and such-like articles are made. The fruit is normally three-sided, covered with blunt tubercles; it is of no special use. The leaves of this palm are the most important product, being used by the Indians for covering their huts, etc.

Butchers' Broom (*Ruscus aculeatus*), a caespitose, stiff, erect spiny-leaved shrub of the Asparagus section of the Lily family (Liliaceæ), native of the southern parts of England and of Europe generally, on the sea-coasts. Its flowers are small, borne in a tuft on the under side of the stiff, spiny leaves. The fruit is red, about the size of a small cherry; it possesses but little economic value, except that the young shoots are tender and eaten like asparagus. Other species of *Ruscus* common in gardens are *R. hypophyllum* and *R. hypoglossum*, low, bushy evergreen shrubs, natives of Europe. *R. racemosus*, a native of Portugal, differs from the preceding, as it produces its flowers in distinct racemes and not on the leaves; it is known by the name of Alexandria Laurel. *R. androgynus* is a strong climbing species, native of Portugal. This, again, differs from the other species in producing its flowers on the margin of the leaves.

Buttercup.—Under this name the flowers of two or three species of *Ranunculus* are known, namely—*R. acris*, *R. bulbosus*, and *R. repens*. They are common English plants of the Buttercup family (Ranunculaceæ), enlivening woods and meadows in the month of May with brilliant yellow flowers, called also King Cups and Gold Cups, and supposed to be the "Cuckoo buds of yellow hue" of Shakespeare. They are acrid and blistering, often inflaming the mouth of cattle, as does also the annual corn weed, *R. arvensis*.

Butter Nut. (See Souari Nut.)

Butter Trees, a name given to several trees whose fruits or bark yield a solid oily or fatty substance, of which the following are the principal:—1. *Bassia butyracea*, a middle-sized tree of the Star Apple family (Sapotaceæ), native of Nepal and other

parts of India. By pressure the seeds yield a semi-solid oil, which thickens and becomes like lard; it is used for culinary purposes, also for making soap, and by the natives of rank for anointing the body. It is sometimes called Chooree, and forms a considerable article of trade. The flowers abound in honey, scarcely differing in the raw state from hive honey, except that it is more limpid. It is manufactured into sugar, in every respect equal to that of the sugar-cane. 2. *Bassia latifolia*, a tree 40 to 50 feet high and 6 to 7 feet in girth, native of Bengal and other parts of India. Like the preceding, the seeds yield a fatty substance used as butter. The flowers become fleshy, and from them an ardent spirit is distilled. The flowers are eaten raw by the natives in the district of Circars, and are also dried and preserved, forming a considerable article of food. They have further been recently imported into this country for feeding pigs and poultry. A recent writer speaks of it thus: "Any one standing on the dry metamorphic Kharapoor Hills, in the district of Monghyr, 250 miles north-west of Calcutta, and looking on to the plains below, may see 100,000 'Mahwa trees.' Any one fresh from Calcutta would mistake these for Mango trees, whose crops are uncertain; the Mahwa crop never fails. The part eaten is the succulent corollas which fall in great profusion from the trees in March and April. Then is the feasting time for the humbler members of creation—birds, squirrels, and tree shrews feast among the branches by day, whilst the poor villagers collect the corollas which fall to the ground on all sides; nor does the feasting end with day, at sunset peacocks and jungle fowl steal out from the surrounding jungle to share the mahwa with deer and bears." During the season of scarcity which prevailed at Behar during 1873-74, the mahwa crop, which was unusually abundant, kept thousands of poor people from starving. 3. Shea Butter (*Butyrospermum Parkii*), a tree, native of Western tropical Africa. It attains the height of from 60 to 90 feet, and a circumference of from 6 to 9 feet. The leaves are large and bright green, the fruit is about the size of a peach, but more oblong, consisting of

sweet pulp and a bony seed with a kernel, which, after being separated from the shell, is pounded and boiled, when a fatty substance swims on the top of the water, which is strained off, and when cold resembles butter. It was first brought into notice by Mungo Park, who found the trees abundant in the kingdom of Bambarra. It is an extensive article of trade with the natives, and forms an important food product. It has the consistence of tallow, is quite white, and has a fatty, often rancid taste. It has recently become an article of trade with this country for soap-making. 4. *Pentadesma butyracea*, a tree of the Gomboge family (Guttiferæ), native of Sierra Leone and other parts of Western tropical Africa. It attains the height of 30 or 40 feet, and bears an ovoid fruit of a dark brown colour, containing a yellow, greasy juice, which is used by the natives mixed with their food, but its strong turpentine flavour is not palatable to Europeans. It is sold as butter in the markets of Freetown, but it must not be confounded with Shea butter. 5. Chignite, the Kaffir name of a substance obtained from *Combretum butyraceum*, a climbing shrub or tree of the Myrobalan family (Combretaceæ), native of South-Eastern Africa. This substance is white, hard, and somewhat aromatic, and is taken to Mozambique as an article of commerce. It is not known whether it is obtained from the kernel of the fruit or from the bark, but probably the latter, and it is of a similar nature to the substance called Vegetable Glue produced by *C. guayea* (which see).

Butterwort (*Pinguicula vulgaris*), a small perennial plant with oblong lanceolate leaves in the form of a rosette close to the ground, from which rises a slender stem bearing a single flower. It belongs to the family of Bladderworts (Lentibulariaceæ), and is a native of this country, growing in boggy ground, and is also abundant in Scotland. Its leaves are greasy to the touch, and have the property of coagulating milk. On account of flies and other insects adhering to the leaves it has recently been ranked with the sundews as a carnivorous plant.

Button Tree, a name in the West Indies for *Conocarpus erecta*, a tree of the Myrobalan family (Combretaceæ). It has small flowers compacted in round heads, which are compared to buttons. It was introduced to this country in 1752, and grown in the hothouses at Kew, but is of no special use.

Button-wood, a name in North America for *Cephalanthus occidentalis*, a shrub of the Cinchona family (Rubiaceæ). It has simple opposite or whorled leaves and small yellowish-white flowers, produced in round heads compared to buttons, and, like the preceding, is of no special use. It was introduced in 1735, and is hardy, but is not much patronised, except in botanic gardens. Button-wood is also a name for the wood of *Platanus occidentalis*, a North American tree of the Plane family (Platanaceæ).

Cabbage, the common name of *Brassica oleracea*, a biennial of the Cruciferous family (Cruciferae), a native of the sea-shores of this country. In 1706 Dr. Peachy, in his Herbal, says it grows everywhere on the coast of England; our people in such places eat it, preferring it to garden cabbage. It is considered by successive cultivation to be the parent of all the forms of the cabbage group now in general use for culinary purposes, of which the following are the principal:—1. The common white cabbage; 2. Red cabbage; 3. Savoys—these, when perfect, consist of solid masses formed by the leaves compactly enveloping one another; 4. Coleworts, a name applied to the different varieties of white cabbage before becoming solid; 5. Borecole or Scotch Kale, has tall stems and loose leaves, often variously coloured; 6. Curly greens, with tall stems and large heads of finely-cut spreading leaves; 7. Cauliflower—the heads of cauliflower (so-called) consist of the metamorphosed condition of the flower; 8. Broccoli, the head formed in the same way as cauliflower; 9. Cow or Jersey cabbage, a tall, slender-stemmed variety of the common cabbage, growing in Jersey, sometimes attaining the height of 10 to 12 feet, terminated by a head of compacted leaves. When dry, the stem is very light and firm, and walking-sticks are made of it. As already stated, the whole of

the above are considered to have sprung from the wild cabbage; but there is no record of when or how they came to assume their respective forms. Some of the varieties are supposed to have been introduced to this country by the Romans. The cauliflower and broccoli are recorded to have been cultivated in France and Italy in the middle of the sixteenth century.

Cabbage Bark Tree, a name in the West Indies for *Andira inermis*, a tree of the Bean family (Leguminosæ). Its bark has a very disagreeable smell, and is used as a worm powder, but requires caution in its use, as it is highly narcotic.

Cabbage, Kerguelen's Land (*Pringlea antiscorbutica*), is one of the most remarkable plants of the Cruciferous family. It is a native of the uninhabited and inhospitable island called Kerguelen's Land, situated in the Southern Ocean 48° S., where it is a most conspicuous plant, and where only it is found. It closely resembles the common cabbage, being nearly as large, having a firm head and white heart. It is found in great abundance, and is highly valuable as a vegetable to the crews of ships touching there. It is chiefly distinguished from cabbage by the nature of its seed-vessels and seeds.

Cabbage Palm (*Areca oleracea*), a Common palm of the West Indies. It has a slender stem, and grows to a great height. This and others of the same nature are called Cabbage Palms on account of their young unexpanded leaves being used as a vegetable. To obtain this insignificant morsel these noble trees, some a hundred years old, and 100 feet high, have to be cut down.

Ptychosperma (*Seaforthia*) *elegans* is the cabbage palm of New South Wales; it, with the elegant Fan Palm (*Livistona australis*), Tree Ferns, Cedar (*Cedrela*), Gigantic Nettle, and other remarkable trees of tropical aspect, formed the primeval forests of the Illawarra district of New South Wales; and although a hundred years have not passed since first seen by civilised man, they are now fast disappearing; remnants only remaining in places where the plough has not reached.

Cacao. (*See* Chocolate Nut.)

Cactus, a name originally given by Theophrastus (B.C. 288) to a spiny plant; but what that plant was modern investigation has failed to ascertain. Linnæus adapted it for the name of a genus of spiny plants, which in modern botany represents the Cactus family (Cactaceæ), of which there are many species. The whole, with one or two exceptions, are natives of the West Indian Islands and the American continent, where they are found in greater or less abundance in the different regions, from the Rocky Mountains and Oregon in the North, and Chili and Paraguay in the South. They grow on rocks and in hot dry sterile places; some love moisture, growing on trees. They vary greatly in size and form. On account of the substance of which they are formed consisting of soft fleshy matter, they are called succulent plants. Their leafless and unplant-like forms led them to become early objects of curiosity in this country. *C. Opuntia* is recorded as having been cultivated in his garden by John Gerard at Holborn before 1596. In Aiton's *Hortus Kewensis*, published 1789, twenty-two species are recorded, and in the second edition, 1813, this number was only increased by two. They not only formed objects of curiosity in botanic gardens, but also in the hothouses of many private gardens. About 1830, species chiefly of the section *Echinocactus* began to be introduced from Mexico, which were patronised by a few rich amateurs, not only in this country, but also on the Continent, who vied with each other in the possession of new importations, and prices as high as £10, £20, or even £30, were given for single plants. This mania lasted only the lifetime of the original amateurs, and private collections of *Cactææ* in this country are now for the most part a thing of the past. About 800 species of *Cactææ* are described in books, of which upwards of 700 names are recorded in nurserymen's catalogues. This number is consequent on different names being given to the same species by different authors, and the various forms of the same being also described as distinct species. During the above period the Kew collection was greatly increased by purchases, as also by exchanges; but, after much trouble and expense, the collection in its best days

consisted of only 250 forms sufficiently distinct to be considered as species. Their various forms, with their slight differences in the character of their flowers, led modern botanists to classify the allied species into groups considered by some equivalent to genera, of which the following are the principal:—1. *Cereus*—This has become a familiar name, by including the well-known creeping and night-flowering *Cereus*, as also the erect species called Torch Thistles. 2. *Opuntia*—Under this are included the prickly Pear and Indian Fig. 3. *Epiphyllum*—This differs from the preceding in having broad flat leaf-like branches jointed upon one another, flowers showy, crimson or scarlet, or creamy white, of which there are varieties. They form conspicuous objects at Horticultural Shows. By some botanists several species of this group are separated under the name of *Phyllocactus*. 4. *Melocactus*—Melonthistles. 5. *Echinocactus*—Hedgehog Thistle. 6. *Mamiliaria*—Mammal or Nipple Thistles. 7. *Rhipsalis*—Mistletoe Cactæ, so called from growing on trees, and the berries of some of the species being white like mistletoe berries. They have slender cord-like, or jointed stems and branches, or they are broad and leaf-like. 8. *Pereskia*—Barbadoes Gooseberry (which see). The particulars of the useful species in the preceding group will be found under their respective common names.

Caden, an Indian name for the palm *Phoenix sylvestris*.

Cadju, a name in some parts of South America for the gum obtained from *Anacardium occidentale*. (See Cashew Nut.)

Caffre and **Hottentot Bread** is obtained by burying the stems in the ground, of several species of *Zamia*, a genus of the Cycas family (Cycadaceæ), natives of South Africa. After lying in the ground for a few months, the mucilaginous centre, which is like sago, is taken out, dried, and made into cakes, like bread. The name Caffre Bread is also applied to the plant of *Encephalartos Caffre*. (See *Zamia*.)

Caffre Butter. (See Glue Vegetable.)

Caimito, in Peru the name of the fruit of *Lucuma caimito*,

a large tree of the Star Apple family (Sapotaceæ). The fruit is about 3 inches long, similar to the Sappodilla Plum, but the pulp is softer, and superior in point of flavour.

Cajeput Oil (*Melaleuca minor*), a moderate-sized tree of the Myrtle family (Myrtaceæ), native of the islands of the Indian Archipelago, and Eastern and Northern Australia. It is called the White Tree on account of the colour of its bark, which is white and in layers, like thin paper. It is used by the natives for many domestic purposes. The leaves of the tree, which are smooth and myrtle-like, by fermentation and distillation yield a green oil known as Cajeput. It is highly valued in medicine as a carminative, stimulant, sudorific, and antispasmodic; also externally in chronic rheumatism, and is much used as a cure for cholera. A species of *Melaleuca*, with white papery bark (probably *M. minor*), is described by Drummond as growing in West Australia.

Calaba Tree, a name in the West Indies for *Calophyllum Calaba*, a tree of the Gamboge family (Guttiferæ), native of the West Indies and Brazil, a stout tree attaining a height of from 50 to 60 feet, with opposite, long, elliptical leaves, generally notched at the apex, and bearing short racemes of sweet-scented flowers. The fruit is drupe-like, containing a single seed, which yields an oil fit for lamps. In Brazil the wood is called Santa Maria Wood. Some years ago it was imported for shipbuilding, but has since been discarded.

Calabar Bean (*Physostigma venenosum*), a trifoliate leaved climber of the Bean family (Leguminosæ), having a woody stem 2 inches in diameter, attaining a great length. The pods are about 6 or 7 inches long, and contain several seeds of a kidney shape, about an inch in length, of a dark chocolate brown colour, approaching black. They are highly poisonous. The plant is a native of Old Calabar, and is there used by the natives as an ordeal, and is generally known as the Ordeal Bean of Old Calabar. In 1864 a quantity of these beans was imported into Liverpool, and not finding a market, they were thrown away on a rubbish heap. Some of them were afterwards found by some

children, and were eaten by them, fatal results ensuing in some instances. Calabar Bean is chiefly used in ophthalmic cases, as it causes contraction of the pupil of the eye in certain diseases. It is also occasionally used internally in cases of tetanus, epilepsy, and other affections of the nerves.

Calabash (*Crescentia cujete*), a well-known tree of the section Crescentieæ, of the family Bignoniaceæ, wild, and cultivated throughout the West Indies and tropical America. It is a rude branching tree, attaining a height of 20 to 30 feet, with simple leaves, or often three together on a broad leaf-stalk. This and *C. cucurbitina* are most important for the purposes to which the shells of their fruit are applied; the first has a globose fruit, varying in size from a few to 18 inches in diameter; that of the latter being more oval and oblong, and also of various sizes. When perfect the shells become hard, and are used for various domestic utensils—such as cups, water-bottles, spoons, and the like. The pulp, in which the seed lies, is used by negroes as a medicine.

Calabur Tree, a name in tropical America for *Muntingia Calabura*, a member of the Lime Tree family (Tiliaceæ). In St. Domingo the wood is used for staves, and cords are made from the bast.

Calahula, a general name in many parts of South America for certain ferns, which are considered to be efficacious in syphilis. The principal being *Phlebodium aureum*, *Campyloneuron phyllitides*, and *Polystichum coriaceum*.

Calamander-wood (*Diospyros quæsitæ*), a large tree of the Ebony family (Ebenaceæ), native of Ceylon, having beautiful hard wood, much prized for making boxes and other ornamental articles.

Calambac-wood (*Aloexylon Agallochum*), a tree of the Bean family (Leguminosæ), said to attain the height of 60 feet, native of Cochin China. The wood is highly odoriferous, and is much esteemed in perfumery. It is one of the trees called Eagle-wood (which see).

Calamus, Sweet (*Andropogon calamus aromaticus*), a peren-

nial tufted grass, native of India. It yields an aromatic oil used in perfumery.

Calceolaria, a now familiar botanical name for a genus of plants of the Figwort family (Scrophulariaceæ), containing many species, annuals, perennials, or herbaceous plants not exceeding 1 to 2 feet in height; the greater number have yellow flowers, a few purple. They are great favourites as greenhouse plants, as well as for summer flower-beds, and many fine hybrid varieties have been raised. They are all natives of South America, and are of modern introduction. Fifty years ago the only species known were *C. pinnata* and *C. Fothergillii*. The latter, a native of the Falkland Islands, is among the prettiest of wild flowers on that inhospitable group. The name Calceolaria, which is derived from calceus, a little slipper, is given on account of the lower lip of the flowers being in the form of a shoe or pouch.

Callopisma, a genus of herbs of the Gentian family (Gentianaceæ), of which two species are mentioned by Dr. Gardner as making the fields gay about Goyaz, a province of Brazil. It is highly bitter, and is used by the natives as a tonic, and in fevers. It is collected when in full flower, and bundles of it are to be seen hanging up to dry against almost every house.

Caltrops (*Tribulus terrestris*), a low trailing annual plant with conjugate leaves, and capsular spiny fruit of the Bean Caper family (Zygophyllaceæ), native of Southern Europe and Syria. When perfect, the spines of the fruit are hard and stiff, and are a great annoyance to the incautious traveller, hence the English name Caltrops; and it is supposed by some to be the thistles of St. Matthew, who says—"Do men gather grapes of thorns or figs of *thistles*?"

Caltrops, Water. (See Chestnut, Water.)

Calumba, American (*Frasera Walteri*), a biennial herb of the Gentian family (Gentianaceæ), native of North America. Its root is an excellent bitter, equal to that of Gentian; but if taken in excess it is emetic and cathartic. It has been imported to this country under the name of American Calumba Root.

Calumba, False (*Coscinium fenestratum*), a climbing shrub of the Moon-seed family (Menispermaceæ), a native of Ceylon; the stem varies from 1 to 4 inches in diameter, is very porous, and of a yellowish colour. Some years ago a large quantity was imported into London, cut in slices, and sold as Calumba root; but its hard and woody texture makes it readily distinguishable from the true Calumba root. A yellow dye is extracted from it.

Calumba Root (*Jateorhiza Calumba*), a climbing shrub of the Moon-seed family (Menispermaceæ), native of the East Coast of Africa. In Mozambique its roots form a considerable article of trade. They may be compared to parsnips, but are very much larger, more cylindrical, and grow in clusters, slanting to the ground. They are cut in slices, dried and strung, and are of a yellowish colour. In this state they form the Calumba root of commerce, much prized for its medicinal qualities. It was first known in this country by specimens having been received from Colombo in Ceylon (hence its name), but which had been originally received there from Mozambique.

Camel Thorn (*Alhagi camelorum*), a shrub of the Bean family (Leguminosæ). (See Manna.)

Camel Tree (*Acacia giraffæ*), a thorny tree of the Bean family (Leguminosæ), native of South Africa; its spreading branches are always a uniform distance from the ground, consequent upon all within reach being eaten by the giraffes.

Camellia (*Camellia japonica*).—This well-known shrub belongs to the Tea family (Ternstrœmiaceæ), and is a native of China and Japan, introduced before 1740 by Lord James Petre, a celebrated introducer of new plants. The first introduced was the single red, which was soon followed by the double red, double white, anemone flowered or Warratah, double striped and others. During the first half of the present century many fine new varieties have been raised, and camellias became amongst the most important trade plants, both in this country and on the Continent.

C. Sasanqua is a small-leaved species attaining a height of 12 to 15 feet, with small single white flowers. It is often

planted as a shelter for tea plants, and its leaves are frequently mixed with tea. The flowers are sweet-scented, and the Chinese have an idea that they scent the tea leaves. The seeds of *Camellia* contain an oil which is much used for domestic purposes in China.

Camomile or Chamomile (*Anthemis nobilis*), a perennial much-branched herb with daisy-like flowers; it belongs to the Composite family (Compositæ). It is a native of Britain, and is extensively cultivated for its flower-heads. It is extremely bitter, and is highly prized as a tonic, Chamomile tea being well known to restore the appetite. The flowers are also used in fomentations.

Camphire.—The sweet-smelling Camphire of Solomon is asserted to be *Lawsonia alba*, a shrub of the family Lythraceæ, native of Western Asia, Egypt, and the African coasts of the Mediterranean; it has also become indigenous in India. It was in ancient repute as a cosmetic under the Arabic name of Henna. The leaves are powdered and made into a paste, and used in Egypt for colouring the finger nails and the hair and beard, imparting a yellow colour, which is considered to add to the beauty. The manes of horses have even been coloured with it. This practice has descended from very remote ages, as proved by the fact of Henna having been found in Egyptian mummies. In Jamaica it has become naturalised and is called Jamaica Mignonette. It is cultivated in Egypt, and bunches of its flowers are sold in the streets of Cairo, their scent being like that of roses. In its wild state it is sometimes spiny, and is known under the names of *L. spinosa* and *L. alba*, but they are now considered to be forms of only one species.

Camphor, Common, of China, is the produce of *Cinnamomum Camphora*, a tall tree of the Laurel family (Lauraceæ), with ovate, acuminate, smooth, ribbed, evergreen leaves, a native of China and Japan. The roots, stem, and leaves of the tree have an aromatic odour, and contain the substance called Camphor, which is obtained in two ways; first, by cutting up the whole of the tree into small pieces and boiling them in a trough

over which are placed inverted bowls, the steam rising into these bowls carries with it the camphor, which is deposited and forms into masses or crystals. The other process is by placing chips of the wood and branches in covered iron vessels, in the covers of which are placed cut up straw and rushes. Heat is then applied, the camphor volatilises and condenses on the straws; it is scraped off and purified, forming the crude camphor of commerce.

Camphor, Sumatra and Bornean, the produce of *Dryobalanops aromatica*, a tree of the Dipterocarpaceæ family, found chiefly in Sumatra and Borneo. It is a noble tree, often growing to a height of 90 feet before branching. The bark separates from the stem in large flakes. The foliage is very dense, forming a fine head. To obtain the camphor the tree is felled and cut into blocks, which are split longitudinally, when the camphor is found in a concrete state in the fissures of the wood, it is white and transparent. The quantity yielded depends upon the age of the tree; middle-aged trees yield from 10 to 12 lbs. A more or less quantity of essential oil is also found in the cavities of the wood, which on being crystallised, yields some resin, and a small quantity of camphor. This camphor and oil are highly valued in China and Japan, as also in Borneo and Sumatra, and are used chiefly for medical purposes in various ways, and for various complaints, and also for embalming the bodies of the rajahs.

Another kind of camphor is obtained from *Blumea balsamifera*, a herb of the Aster section of Compositæ, a native of China, India, and other countries of Eastern Asia. It is stated that £3000 worth of this camphor is annually used in the manufacture of Indian ink, to which it imparts its peculiar scent. In China this kind of camphor is called "Ngai," and is also said to be derived from a species of *Artemisia*.

Camwood, or Barwood (*Baphia nitida*), a tree of the Bean family (Leguminosæ), native of Western tropical Africa, attaining a height of 40 or more feet. Its wood is red, and is largely

imported into this country for the purpose of dyeing woven fabrics, especially English Bandana handkerchiefs.

Canada Balsam. (*See* Balm of Gilead Fir.)

Canadian Rice (*Zizania aquatica*), a floating grass growing in lakes in Canada and some parts of the United States. Canoes are employed in collecting the grain, which forms a staple article of food for the Indian tribes, and also for the white man, and is considered more nutritious than ordinary rice (*Oryza sativa*). The stems are used for making paper. Some years ago its cultivation was attempted in the fens of Lincolnshire, with the intention of popularising it as a food for the poor, but it failed.

Canary Flower (*Tropæolum peregrinum*), an annual of the Indian Cress family (*Tropæolaceæ*). It is a native of New Grenada, and is a favourite arbour plant in this country, producing numerous very showy yellow flowers.

Canary Seed (*Phalaris canariensis*), an upright annual grass 2 to 2½ feet high, a native of this country, but rare. It is cultivated chiefly in East Kent for the sake of its seeds, which are used for feeding cage-birds. It is also largely imported from Barbary, Turkey, and Holland.

Canary Wood, the name of the wood of *Persea indica* and *P. canariensis*, fine evergreen trees of the Laurel family (*Lauraceæ*), natives of the Canary Islands and Madeira.

Candle Nut (*Aleurites triloba*), a tree of the Spurgewort family (*Euphorbiaceæ*), about 30 feet high, with simple lobed leaves, native of most warm countries throughout India, Malay, Japan, and the whole of the islands of the Pacific Ocean, where it is cultivated for the sake of its fruit, which is about 2 inches in diameter, and contains a hard nut, which has the flavour of a walnut, and yields a large quantity of oil, which is extensively used in many of the Polynesian islands. In the Hawaiian group the entire kernels are strung on a stick, and lighted as a candle; this is also done in India, where the oil is much used. It is imported into this country for candle-making, and is said to be equal to sesame or rape oils.

Candle Tree (*Parmentiera cereifera*), a tree of the Calabash family (Bignoniaceæ), attaining the height of 20 feet, native of the forests of Panama. It has trifoliate leaves, and fruit from 3 to 4 feet in length and about 1 inch in diameter, of a yellowish colour, hanging from the tree so as to present the appearance of wax candles, and in such abundance as to give the idea of a chandler's shop, whence it has received the name of Candle Tree. They are much used as food for cattle, which fatten on them, but their continued use imparts an apple-like taste to the flesh.

Candleberry Myrtle, a common name for the species of *Myrica*, the type of the family Myricaceæ. Their berry-like fruit is covered with a waxy secretion, which is obtained by placing the berries in boiling water; the wax then floats on the surface, and is skimmed off; it hardens, and candles are made of it in the countries in which the species are found. 1. *M. cerifera* is a North American species, and is also recorded to be a native of New Grenada, where it is much valued. 2. *M. carolinensis*, a native of Carolina; of this species it is stated that 4 lbs. of berries will yield 1 lb. of wax. 3. *M. Faya* is a strong-growing shrub or small tree, native of the Azores. 4. *M. cordifolia* and other species, natives of the Cape of Good Hope. 5. *M. Gale*, native of this country.

Canella Bark (*Canella alba*), a tree of the family Canellaceæ, native of the West Indies and South Florida. Its bark is aromatic, and is used as a tonic. It is also called White-wood and Wild Cinnamon.

Canes are represented by the genus *Calamus*, of which there are a considerable number of species, such as *Calamus rotang*, *C. rudentum*, *C. verus*, and others. These are wing-leaved palms, with slender reed-like stems, growing to a great length, from 150 to 200 feet, and even 400 feet, spreading over trees, and scrambling in every direction. The stems and foot-stalks of the leaves of most of the species are furnished with stiff-hooked prickles, which support their slender stems in their scrambling growth. They are applied to many purposes, such as making baskets

hats, mats, etc., and also for ropes and suspension bridges. They are largely imported into this country, under the name of Rattans, for making chair bottoms and other wicker-work purposes.

Other species of the same genus grow erect, and may properly be called Canes, the most conspicuous being *C. scipionum*, the stems of which, when polished, are of a chestnut brown colour, and form the fashionable Malacca canes. It does not come from Malacca, but from Siak, on the opposite coast of Sumatra.

Cannibal Apple (*Solanum anthropophagorum*), a soft, bushy shrub of the Nightshade family (Solanaceæ), attaining the height of 6 feet, having dark-green leaves similar to those of the love apple. It is a native of Fiji, where its fruit figures in the cannibal feasts of the natives.

Cannon-ball Tree (*Couroupita guianensis*), a large tree of the Monkey-pot family (Lecythideæ), native of Guiana. Its large white flowers are produced in clusters on the stem and branches. Its fruit resembles a ball 6 to 8 inches in diameter, of a hard woody texture, surrounded by a circular scar near the centre, which marks the separation of the limb of the calyx. The seeds are numerous, embedded in pulp, which when fresh is of an agreeable flavour, but when dried or exposed to the air has a most abominable odour, which it retains for years.

Canvas. (See Hemp.)

Caoutchouc, better known by the name of India-rubber, is the thickened milky juice of trees, principally of the Bread-fruit, Mulberry, Dogbane, Swallowwort, and Spurgewort families, the original and still greatest quantities being obtained from one or two species of *Hevea*, a genus of the latter family. They are lofty trees, natives of North Brazil, Guiana, and different parts of Central America, *Hevea brasiliensis* being the best known. It is a tree attaining the height of 50 to 100 feet, and has smooth trifoliate leaves, similar in size and form to those of the scarlet-runner. The flowers are inconspicuous, unisexual, and borne in loose panicles. The fruit is a three-valved capsule, con-

taining three seeds. It is found throughout the lower regions of the Amazon, and is abundant on many islands of that great river. During the wet season these islands are flooded, but as soon as the water subsides they are tenanted by numerous Indians and their families, whose occupation is the collecting of Caoutchouc. The milky juice is obtained by making deep vertical and slanting incisions in the bark of the trees; flowing from the wounds, it follows their downward course, and is caught in vessels at the lower end of the vertical incisions. By exposure to the air it thickens and becomes like a creamy paste; a coating of it is then laid on clay moulds, which are suspended over slow fires. When the first coat is dry a second is added, and so on, coat after coat, till the required thickness is attained. When the drying is completed the mass is removed from the mould, and is the raw India-rubber of commerce, its blackness being partly owing to the smoke it absorbs while drying, and partly to exposure to the air. In Nicaragua and other parts it is made into flat cakes, and hung up to dry without artificial heat.

The original use of this substance by the Indians was to make water-vessels for domestic use, and for that purpose it was dried on clay moulds in the form of bottles, in which form it was first brought and still comes occasionally to this country. Our earliest knowledge of this important article dates from the discovery of America. We learn from history that the natives of St. Domingo were seen by Columbus playing games with elastic balls, and that the Mexicans had shoes and clothes made of an elastic substance. The first accurate information of this substance was from M. Condamine, a French naturalist and traveller, in 1735. About 1750, specimens of it appear to have been received in Paris, and in 1772 it is recorded as having been sold in London. It is described by Dr. Priestly as an excellent article for rubbing out pencil-lines from paper, and coming from the "Indies," it became familiarly known as "India-rubber." For fifty years from the above date it was scarcely used for any other purpose. Experimentalists were, however, not idle, and

before the end of the century it was employed in rendering woven fabrics waterproof; but on account of its stiffness in cold, and its stickiness in hot weather, it did not meet with patronage. In 1820 it was, however, more successful, being interwoven with cotton and other fabrics in making articles of elastic dress, such as stockings, braces, garters, bands, and the like. Three years later it was again used to make waterproof clothing, which attained more success than the first, being less influenced by changes of temperature. In 1842, being 350 years from the time it was first seen by Columbus, the discovery was made that India-rubber possessed the power of absorbing sulphur, which rendered it unaffected by extremes of ordinary temperature, even by that of boiling water, and that it could be made to assume any degree of texture, from a thin elastic membrane to the rigidity, and even to the hardness and solidity of iron. In its sulphuretted state it received the name of Vulcanised India-rubber. This discovery has led to many patents being obtained for its use in the manufacture of all kinds of useful articles, from the transparent membrane of the toy balloon to the wheels of carriages, machinery, and railway carriage buffers. Go where we will some application of Caoutchouc is almost sure to meet the eye, and its uses are continually on the increase. Rich and poor, young and old, all share in the benefits derived from the extended use of this remarkable material; and it may be well said that no vegetable substance has been more prolific for useful appliances in domestic economy. The rubber from *Hevea brasiliensis* is in commerce known as Para Rubber.

2. Central American Rubber is the produce of *Castilloa elastica*, a lofty forest tree of the Bread-fruit family (Artocarpaceæ), the stem of some trees near the ground measuring 10 to 12 feet in circumference, and having leaves $1\frac{1}{2}$ feet long and 7 inches broad, sinuated towards the base, pubescent on both sides; the female flowers consist of numerous ovaries, seated in a kind of perianth, formed of scales which become fleshy, and uniting, form a drupe-like fruit. It is a native of South

Mexico, Nicaragua, New Grenada, Bolivia, and other countries of Central America. In some of these countries the elastic juice is obtained by tapping; in others the trees are cut down, and rings are made in the stems at certain distances by cutting out a few inches of the bark; the trunk is then raised to a certain angle, and vessels are placed under each ring into which the milk flows; it soon thickens by exposure to the air, but it is hastened by adding the juice of the Convolvulaceous plant *Ipomœa bonanox*, and instead of being put into moulds like the Para rubber, it is made into sheets and hung up to dry, when it is called Sheet-rubber.

3. Ceara, or Scrap-rubber of commerce, is the produce of *Manihot Glaziovii*, a thick-stemmed, low tree, with thick, short branches, and palmately-divided leaves, belonging to the Euphorbiaceæ. It is a native of Ceara, a province of North Brazil; about 1000 tons of this rubber are exported annually.

4. Borneo Rubber is the produce of a species of *Willughbeia*, formerly described as *Urceola elastica*, a large climber of the Dogbane family (Apocynaceæ), native of the islands of the Malay Archipelago; although a climber, the main stem becomes as thick as a man's body, and yields a large quantity of milky sap, charged with Caoutchouc.

5. East Indian is the produce of *Ficus elastica*, a middle-sized tree of the Mulberry family (Moraceæ), native of India, and plentiful in Assam; it is a much-branched tree, with large shining elliptical leaves; it produces a quantity of Caoutchouc, which, however, is not so valuable as the American. In greenhouses in this country the plant is well known by the name of India-rubber Tree, and its leaves are greatly valued for skeletonising.

6. African. In East and West tropical Africa Caoutchouc is produced by several species of *Landolphia*, a genus of the Dogbane family (Apocynaceæ). *L. Owariensis* is a large creeper, with a stem 4 to 5 inches in diameter, which divides into branches; it has large snow-white, sweet-smelling flowers; the fruit is the size of an orange, with a hard shell, containing a sweet, rather acidulous pulp, which is eaten by the natives.

7. Madagascar Rubber is the produce of *Landolphia gum-mifera*, a large climber of the same family as the preceding, with opposite, smooth, elliptical, blunt leaves ; the flowers are large, white, and produced in cymes ; the fruit is round or pear-shaped, filled with granular pulp, with bean-like seeds ; the stems contain a quantity of Caoutchouc of very good quality.

8. *Cryptostegia grandiflora*, a climber of the Swallowwort family (Asclepiadaceæ), native of India. Its milky juice contains Caoutchouc, but, although the plant is very common, it is doubtful whether its collection would pay.

9. Mangava or Mangabeira, a Brazilian name for *Hancornia speciosa*, a small tree of the Dogbane family (Apocynaceæ), having drooping branches, with small oblong leaves. The flowers are sweet-smelling ; the fruit is a large globular fleshy berry, with numerous seeds, and, like the whole plant, exuding a milky juice ; it is wholesome, and considered by the Brazilians a delicious fruit. The milk of the tree when exposed to the air hardens, and becomes Caoutchouc. In 1880 the importation of India-rubber from all sources amounted to 166,459 cwts.

Many other plants might be noticed producing Caoutchouc, but as most of them are of small size, as compared to those mentioned, the collection requires much time, and not being remunerative, they are therefore neglected. Of late years the great demand for India-rubber and the destruction of trees to obtain it has led the Indian Government to endeavour to introduce the American Caoutchouc trees into India, which has been successfully accomplished during the last few years by the exertions of Mr. Robert Cross, who in 1875 was sent to America for plants of *Castilloa elastica*. These were brought to Kew, where they were fully established and propagated, and ultimately sent to Ceylon and India, where they are thriving ; and in 1876 Mr. Cross was despatched to the Amazon for plants of *Hevea brasiliensis*, 1000 of which were also brought to Kew, together with plants of the Ceara scrap rubber, which, with the preceding, are now flourishing in Ceylon and India. It is therefore probable that in time these trees will be yielding rubber in such

quantities as to greatly lessen our dependence upon the supply from America.

Cape Cotton Shrub, A name in New South Wales for *Gomphocarpus fruticosus*, a milky stemmed small shrub of the Swallowwort family (Asclepiadaceæ), a native of Southern Africa, extending northward to Egypt, also found in Western Asia. It early became naturalised in New South Wales, and about fifty years ago a speculator expected to turn it to good account as a new cotton plant; its fruit is a follicle completely filled with fine silky hairs, which do not adhere in weaving like that of true cotton; he, however, made white hats of it, which were spoilt by the first rainfall. Consequently its use was abandoned.

Cape Weed, a name given to *Roccella tinctoria*. (See Orchil.)

Caper Bush (*Capparis spinosa*), the type of the Caper family (Capparidaceæ), a stiff prickly-branched shrub 3 or 4 feet high, with simple deciduous leaves. It is a plant of the desert throughout Western Asia, Egypt, North Africa, and South Europe, growing in rocky places and very common on old walls and ruins. It is extensively cultivated in France and other parts of Southern Europe for the sake of its flower-buds, which are collected before expansion, and preserved in vinegar, forming the well-known culinary adjunct Capers.

An allied species is *Capparis sodada*, a remarkable bush, occupying large tracts of country in Central Africa, marking the transition from the desert to the more fertile regions of the south, and prevailing especially about Timbuctoo. The currant-like fruit is eaten fresh as well as dried. The root is used by the Mohammedans as a preservative for the teeth, and when burnt salt is obtained.

Caper, False (*Euphorbia lathyris*), a strong growing, milky perennial plant of the Spurgewort family (Euphorbiaceæ), from 2 to 3 feet high, having willow-like glaucous leaves, native of France and Italy and grown in gardens in this country under the name of Caper Bush. The fruit is a three-celled green-

coloured capsule, and has been mistaken and used through ignorance as capers; like the rest of the *Euphorbias*, the fruit is acrid and poisonous.

Capillaire, a syrup made in Italy from the fronds of *Adiantum Capillus-veneris*, generally known as the Maiden-hair Fern, a pretty species growing on rocks in South Europe, and in the same situation on the east and west coasts of this country, but rare, and also found in the Isle of Arran. Many medical virtues are ascribed to Capillaire by Dioscorides and ancient writers, but as a medicine it is now obsolete except as a remedy for coughs. Capillaire is largely advertised at the present day as a hair-producer. Its principal use at the present time is for making a refreshing drink, which is diluted with water before use. Most of the Capillaire sold in London is composed chiefly of syrup flavoured with orange flowers.

Capsicum, a genus of the Nightshade family (Solanaceæ). *C. annum*, is supposed originally to have been a native of some part of South America, but is now cultivated in all tropical regions. It is an annual plant, attaining a height of about 12 or 18 inches. It is too tender for successful outdoor cultivation in this country, but succeeds well and produces fine fruit under glass. There are several varieties, their fruit varying in shape and colour, being either long or short podded, red or yellow, all of which are known under the name of Pod Pepper. There are some very distinct varieties considered by some authors as species, such as Cherry Pepper (*Capsicum cerasiforme*); Bird Pepper (*C. baccatum*); Bell Pepper (*C. grossum*); Spur Pepper (*C. frutescens*), which are all more or less grown in different countries, and extensively used in cookery in hot climates, being considered beneficial in exciting the appetite. The dried fruits when ground constitute Cayenne Pepper. In this country they are generally used as pickles, and in sauces. The small fruits known by the name of Chillies, are mostly produced by *C. fastigiatum*. Capsicums are extensively cultivated in Hungary, giving employment to 2500 families.

Carageen Moss (*Chondrus crispus*), a sea plant of the Dulse

family (Ceramiceæ), common on the rocky coasts and extensively collected as an article of food. It is of a livid purple or greenish colour, and contains a considerable quantity of gelatine. In Ireland it has long been of economical value; prepared by frequent washing and bleached by the sun, it is adapted to various purposes as a substitute for isinglass, especially for the manufacture of jellies, and other culinary purposes, nearly the whole weight being convertible by boiling into the required substance; it is likewise employed medicinally in consumption in lieu of Iceland Moss (*Cetraria islandica*). In Ireland it is collected by the peasantry and is now sold by druggists; it is also known by the name of Irish Moss.

Carajura, a red colouring matter obtained from the leaves of *Bignonia chica*. (See Chica.)

Carambola. (See Blimbing.)

Carana Palm, a name given to a South American palm described as *Mauritia Carana*. (See Ita Palm.)

Carana Resin, a name applied to the gum-resin of one or more species of *Icica*, as *I. Carana*, *I. altissima*, etc. (See Cedar-wood of Guiana.)

Carandas (*Carissa Carandas*), a large straggling, spiny shrub of the Dogbane family (Apocynaceæ), native of India, with small oval elliptical leaves, and small axillary flowers. Its fruit, which is the size of a small plum, is used either pickled or made into a preserve.

Caraway (*Carum Carui*), a biennial of the Carrot family (Umbelliferae), native of Europe. It has become wild in some parts of Britain. It is cultivated in Essex and Kent for the sake of its seeds, which are carminative, and used in confectionery as well as for flavouring spirits. An oil is obtained which is used medicinally.

Cardamoms, the seeds of *Ellettaria Cardamomum*, a plant of the Ginger family (Zingiberaceæ), a native of India, it has perennial reed-like stems, producing fruit for several successive years. The seeds are used in medicine, and considered tonic. The patent medicine called "Solomon's Balm of Gilead" is pre-

pared principally from Cardamoms. Cardamoms are also furnished by species of *Amomum*.

Cardoon (*Cynara Cardunculus*), a strong rooted perennial herb of the Composite family (Compositæ), having long, lanceolate, pinnatifid, smooth, or spiny, radical leaves, from which rise flower-stems 3 feet high, bearing heads of flowers, formed of imbricate scales like the artichoke, but smaller, the centre consisting of pretty blue florets. It is a native of the countries bordering on the Mediterranean, and has been known in this country for 200 years; it is largely cultivated, especially in France, for its leaves, which are blanched, the part used being the thick midrib, which forms an excellent vegetable when properly cooked. Its flowers are said to curdle milk. It has become naturalised and occupies large tracts in the Argentine Republic, a pest to cultivation.

Caricature Plant (*Graptophyllum hortense*), a shrub of the Acanthus family (Acanthaceæ), native of India. Its leaves are smooth, elliptical, lanceolate, 3 to 4 inches in length, and remarkable for their variegation. They are yellow in colour, and present many forms on the same leaf, which are compared to caricatures of the human face.

Carnauba Palm. (See Wax Palm.)

Carnation. (See Clove.)

Carob Tree, also called Locust Tree and St. John's Bread (*Ceratonia Siliqua*), a small much-branched tree of the Bean family (Leguminosæ), attaining the height of from 20 to 30 feet, with shining, smooth, winged leaves. It is a native of countries bordering the Mediterranean, extending to Syria and Western Asia. The flowers are small, yellow, and have a fetid odour. Its fruit (a pod), 6 to 8 inches in length, is similar to a broad bean pod, but of a firmer texture. It contains many pea-like seeds embedded in an agreeably flavoured mucilaginous saccharine pulp. In all countries where the trees grow the pods are used for feeding cattle and swine, and are imported into this country for those purposes, and form an important ingredient in patent cattle foods. They are sold in

the shops as sweets for children. Carobs are considered to be the "husks" spoken of in the New Testament as eaten by the Prodigal Son, and the "Locusts" that St. John lived upon in the Wilderness, hence the name St. John's Bread Tree.

+ **Carrion Flowers.**—Many flowers possess a fetid odour. In those of the genus *Stapelia*, belonging to the Swallowwort family (Asclepiadaceæ), the smell is similar to that of carrion, to such a degree, indeed, that blue-bottle flies lay their eggs in them. The members of the genus *Stapelia*, however, are very interesting, and number about a hundred species, all (with a few exceptions) being natives of South Africa; they consist of succulent, erect, many-stemmed, leafless plants, not exceeding 6 to 8 inches in height, the stems are four-sided, generally toothed, and on some a very minute leaf may be sometimes seen. The flowers consist of five more or less succulent petals, smooth or pilose, and of various sizes and colours, some spotted and variegated; and, even with their abominable odour, are patronised in botanic gardens on account of their curious and interesting structure. In America the name Carrion Flower is also given to *Smilax herbacea*.

Carrot (*Daucus Carota*), a biennial of the Carrot family (Umbelliferae), native of Britain; in its wild state it is found growing by road-sides and in waste places, where it has a dry, slender root, which is not edible, but it is generally believed that the cultivated garden carrot originated from it. The hard interior being the true root, the fleshy exterior part having been brought about by cultivation. Besides being a culinary vegetable it is also used for feeding cattle, and its juice is used for colouring butter and cheese.

Carrot, Deadly, a common name for the species of *Thapsia*, a genus of the Carrot family (Umbelliferae), of which about a dozen species are recorded, but the identification of some is not very satisfactory. They consist of strong-rooted perennial herbs, attaining a height of 3 to 5 feet, with multiple fennel-like leaves and large umbels of generally yellow flowers. They are natives of countries on both sides of the Mediterranean; most of

them yield gum like that of galbanum, which possesses medicinal properties, especially the species named by the early Greek writers *Silphium*, which produced the "*Lasér Cyrenaicum*," so famed by the ancient Cyrenians as to be considered worth its weight in gold, and the figures of the plant to be worthy of being represented on their coins. In order to endeavour to identify the "*Silphium*," the late Mr. Koenig, Keeper of the Coins in the British Museum, about thirty-five years ago, obtained a plant direct from the country of Cyrene, which was supposed to be the true plant; it was sent to the Royal Gardens, Kew, but, unfortunately, it did not live long, the soil in which it grew having become saturated with salt water during the voyage, but the few radical leaves that were still fresh on its arrival were sufficient to enable me to determine it to be a closely-allied species (if not the same) as *Ferula* (*Thapsia*) *glauca* or *F. garganica*; with regard to the latter species it is recorded to be common in Southern Europe as also in Algeria, and is regarded by the natives as a specific against complaints of all kinds. To camels it is a deadly poison.

Carrot, Peruvian (*Arracacha esculenta*), a perennial herb of the Umbel family; it attains a height of 2 or 3 feet. It has divided leaves like the Carrot, and small umbels of purple flowers, and has large fleshy roots, which form an important article of food in the above and other countries of Southern and Central America. About fifty years ago a packet of its roots was received at Kew for the purpose of ascertaining whether it would be a plant capable of being cultivated in this country, but it did not succeed; the summer heat was not sufficient to bring it to maturity.

Carrot Tree (*Monizia edulis*), a curious plant, being one of the few caulescent examples of the Carrot family (Umbelliferae). The stems of young plants look like carrots or parsnips inverted above ground, but in old plants they attain a diameter of 6 inches at the base, tapering upwards and attaining the height of from 4 to 6 feet, terminating with a crown of decompound spreading leaves, having the aspect of a tree-fern. It is a native

of the small uninhabited island called Deserta Grande, near Madeira; it grows on rocky, almost inaccessible places.

Cascarilla Bark (*Croton Eluteria*), a small tree of the Spurge-wort family (Euphorbiaceæ), native of the Bahamas, from whence it is imported to this country and used as a bitter tonic.

Cashew Nut (*Anacardium occidentale*), a tree of the Terebinth family (Anacardiaceæ), native of the West Indies, but now very generally found throughout the whole of the tropics. It attains a considerable size, and in habit of growth it in general resembles the walnut, and its leaves, which are simple, have a similar scent. Its fruit is kidney-shaped, about an inch in length, and borne on a fleshy receptacle. The kernel of the nut is enclosed in a coriaceous covering consisting of two layers, between which is a thick caustic oil, which is highly excoriating. This acidity is, however, dispelled by roasting; the kernel then has a pleasant milky flavour, and in some places it takes the place of our almonds and nuts at table. In roasting care must be taken to avoid the fumes, as they cause inflammation in the face and eyes. A light-yellow, sweet-tasted oil is expressed from the kernel, said to be little inferior to olive oil. The trunk and branches of the trees on being wounded during the ascent of the sap yield a transparent gum similar in appearance to Gum Arabic. It is used to prevent insects from attacking books, etc.

Cassareep.—The concentrated juice of the roots of *Manihot* rendered harmless by boiling, when it forms a thick black fluid, much used in the West Indies for culinary purposes, especially in the formation of a dish called Pepper Pot. It is brought to this country and largely used as the basis of table sauces.

Cassava.—*Manihot utilitissima* (bitter) and *M. aipi* (sweet), slender, erect-stemmed shrubs, belonging to the Spurge family (Euphorbiaceæ). They are extensively cultivated in tropical America and the West Indies for their large, fleshy roots; those of *M. utilitissima* contain a juice of a highly poisonous nature, while those of *M. aipi*, the sweet Manihot, are wholesome, and used as a vegetable; they both contain a large quantity of

farina, especially *M. utilisissima*, which is the most extensively cultivated. The farina is obtained by grating the fleshy roots to a pulp, the poisonous juice is then expelled by pressure and washing, and the mass is pounded into coarse meal resembling bread crumbs, which is made into cakes and subjected to heat, which dries off all remaining poison. This forms the Cassava Bread, which is an important article of food throughout tropical America. An intoxicating beverage is made from it called Piwarrie, which is prepared by women chewing the cassava cakes, and ejecting the masticated substance into a wooden bowl, where it is allowed to ferment for some days, and then boiled; it is a common drink with the natives, and is said to have an agreeable taste; the mode of preparation, however, is repugnant to Europeans, notwithstanding that one who drank it reports thus:—"In my opinion it is very agreeable and wholesome, for I drank it in large quantities at the different Indian settlements I visited." In preparing the Cassava as above stated, the poisonous expressed juice is put into water, the starch which it contains falls to the bottom, the water is poured off, and the starch placed on hot plates; this causes the starch grains to swell and burst, forming the Tapioca or Brazilian Arrowroot of the shops. Of this substance about 600 to 800 tons are imported annually. The plant has been introduced to the Straits Settlements and Travancore, where it is now extensively cultivated, and tapioca made in very large quantities both in the form of torrefied grains as before described, and in pearl form, like sago. A large proportion of this tapioca comes to this country.

In the upper region of the Amazon a kind of tapioca is obtained from a plant supposed to be a species of *Menispermaceæ*. It is called by the natives Bauna Root; it has large, tuberous roots like a turnip, some weighing nearly 50 pounds. It is highly poisonous when fresh, but after repeated macerations yields an excellent tapioca, which constitutes a great part of the food of the Indians.

Cassia Buds. (*See Cinnamon.*)

Cassia Lignea. (*See* Cinnamon.)

Cassie. (*See* *Acacia Farnesiana*.)

Castor Oil. (*See* *Palma Christi*.)

Catalpa (*Catalpa syringæfolia*), a small tree of the Trumpet-flower family (Bignoniaceæ), native of North America. It attains a height of 20 to 30 feet, and has opposite, broad, heart-shaped leaves and terminal panicles of white flowers. It is hardy in this country, and ornamental, but not common.

Catechu, the name of a substance obtained from *Acacia Catechu* by boiling the chopped wood, straining, and evaporating; an astringent resinous substance is thus obtained, which is much used for tanning, and also in medicine; it is likewise obtained from *A. Suma*, and perhaps some other allied species.

Cattimandoo Gum (*Euphorbia Cattimandoo*), a tree of the Spurge family (Euphorbiaceæ), allied to *E. trigona*. When young the stems and branches are succulent, becoming woody with age; it abounds in a milky sap, which when hard partakes of the nature of gutta-percha.

Cattle-poison Plants of West Australia.—Some years after the settlement of the Swan River Colony, many cattle died apparently from poison; it was afterwards found that this was caused by their eating the leaves of some native plants which proved to be species of *Gastrolobium* (*G. trilobum*, *G. obovatum*, and *G. spinosum*), pretty evergreen shrubs of the Bean family (Leguminosæ), cultivated in the greenhouses at Kew.

Cauliflower. (*See* Cabbage.)

Cebadilla, a name given to the seeds of *Asagraea officinalis*, a bulbous plant belonging to the Colchicum family (Melanthaceæ), native of Mexico. From the seeds Veratria is prepared, which is used in neuralgia and rheumatic affections.

Cedar.—The word Cedar is a name given in different countries to a considerable number of distinct kinds of trees. Originally it was restricted to those of the family Coniferæ, but settlers in new countries having found that the wood of trees of other families had a similar appearance and scent to the cedar wood, the trees were thus called Cedars. Cedar is first mentioned in

Leviticus, where we find that Moses directs the Israelites to take cedar wood. What this cedar was it is impossible to say, but considering that the Israelites were then in the wilderness, and the principal trees of that country were the Shittah (a species of *Acacia*), and several species of Juniper, such as *Juniperus oxycedrus*, *J. phænicea*, and *J. sabina*, it is supposed by most Bible commentators that it was the wood of one or other of these that was known to Moses by the name of Cedar, in Hebrew *Eres*. The next mention of cedar trees is that Hiram, King of Tyre, sent cedar trees to David, and that his son Solomon made an engagement with him to hew him cedar trees out of Lebanon.

There can be no doubt that these trees are the same as those that now exist on Lebanon, and have in modern times become known as the Cedars of Lebanon, in botany called *Cedrus libani*. It is recorded to have been introduced to this country in 1683, where it soon became a favourite, and was extensively planted in parks and gardens, and old and very large trees are found in various parts of the country. Its timber is not much valued with us; but at one time it was considered well adapted for natural history cabinets, its scent being supposed to be hurtful to insects. But in time it was found that the specimens became covered with a resinous deposit.

Cedar, Deodar, also called Indian Cedar (*Cedrus Deodara*), a large tree, said to attain the height of 100 feet, native of the Himalaya Mountains, similar in habit of growth to the cedar of Lebanon, and by some supposed to be only a variety. Its timber is much valued and used in India. It was introduced in 1831, and the original plant may now be seen, as well as many other fine specimens, growing at Kew. At Dropmore a tree has attained the height of 60 feet.

Cedar, Atlas (*Cedrus atlantica*), a tree similar to the two preceding, native of the Atlas Mountains of Northern Africa. It was introduced into this country about 1840. A plant at Kew has attained the height of 30 feet. It is supposed by some botanists that the three forms here described—namely, *C. libani*, *C. Deodara*, and *C. atlantica*—are only varieties of one species, but their

appearance and habit of growth seem to indicate that, if they did originate from one type, they have, in the progress of time and the influence of different climates, assumed the different appearances under which they are now seen.

Cedar of Goa (*Cupressus Lusitanica*), a tree of the family Coniferæ, in general appearance resembling the common cypress, but growing much taller, and having leaves of a more glaucous hue. Although it is called the Portuguese Cypress, and forms natural forests in Portugal, it is nevertheless supposed to be of Indian origin, and to have been introduced in early times from the colony of Goa on the west coast of the Indian Peninsula, hence it has also received the name of Cedar of Goa. It was introduced into this country in 1783, but is too tender to grow in the open air.

Cedar, Japan (*Cryptomeria japonica*), a large and handsome evergreen tree of the Cypress tribe of Coniferæ, native of China and Japan, where it is extensively cultivated as an ornamental tree. It was introduced to this country in 1843 by Captain Sir Everard Home. The first and original plant is to be seen growing in the Royal Gardens, Kew, and has become a favourite ornamental tree.

Cedar, Bermuda (*Juniperus bermudiana*), a small tree, or often a bush, of the Cypress tribe of Coniferæ, native of the Bermudas. It is called the Pencil Cedar, its wood being employed in the manufacture of black-lead pencils.

Cedar, Red or Virginian (*Juniperus virginiana*). — This is a tree similar to the preceding, native of the Southern United States, and its wood is used for the same purpose. It is hardy, and forms a small evergreen tree.

Cedar, White (*Cupressus thyoides*), a small tree, often having the appearance of a shrub, attaining a height of 20 to 30 feet. The whole plant has a whitish or glaucous hue. A few years ago fine specimens of this were growing near the pagoda in the pleasure-grounds at Kew.

Cedar, Port Orford (*Cupressus Lawsoniana*), or, as it is now called, *Chamæcyparis Lawsoniana*, a tree of the Cupressineæ

section of the Coniferæ family, native of the Oregon coast, California. It attains a large size, and is highly esteemed for its timber, especially for inside works, and possesses to a high degree many valuable properties.

Cedar, White, of California (*Thuja gigantea*), a large and tall tree belonging to the Cypress tribe of Coniferæ. It is also called British Columbian Cedar and Oregon Cedar, being a native of these countries.

Cedar, Jamaica or West Indian (*Cedrela odorata*), a large tree of the Mahogany family (Meliaceæ), native of Honduras, Jamaica, and other parts of tropical America. It is said to be the most valuable timber tree of Jamaica. It is well adapted for the interior of house fittings, furniture, and all cabinet-work. Its wood is of a reddish-brown colour, and has a pleasant smell; but its bark, leaves, and flowers give out, especially when young and after rains, a most disagreeable alliaceous odour, resembling asafœtida or garlic, mixed with that of highly-dried tobacco. Such being the case, the specific name *odorata* must be considered inappropriate, except that the wood has a similar smell to the cedar.

Cedar, New South Wales (*Cedrela australis*), a lofty tree of the Mahogany family (Meliaceæ), having a circumference of 20 to 30 feet. Its wood is soft, of a reddish colour like mahogany, and is known by the name of Red Cedar in the colony of New South Wales. It is used for house-building, interior fittings, and cabinet-work. Formerly it was abundant in the Illawarra forests, but it has been in such demand that large trees are now very rare, and nurseries have been formed for raising young trees for future use. Judging from its growth in the greenhouses at Kew, it appears to be a rapid grower, and scarcely distinct from *C. odorata* of Jamaica.

Cedar, Indian (*Cedrela Toona*), a large tree of the Mahogany family (Meliaceæ), native of the Bengal and Pegu forests of India. Its wood is fine and close-grained, of a red colour; its bark is astringent, and has been used as a substitute for Peruvian bark. The flowers are of an agreeable odour, resembling

fresh honey, and contain a yellow colouring matter which is used for dyeing, but is not permanent.

Cedar, Brazilian (*Cedrela brasiliensis*), a tall tree attaining a height of 120 feet, and $4\frac{1}{2}$ feet in diameter, native of Southern Brazil. It possesses similar properties and uses to *C. Toona*. (See Cedar, New South Wales.)

Cedar, Queensland (*Pentaceras australis*), a tree of the family Rutaceæ, native of Queensland and New South Wales. Its wood is tough and close-grained.

Cedar Wood of Guiana (*Icica altissima*), a tree of the Myrrh family (Burseraceæ), attaining a height of 60 to 100 feet, and 4 to 5 feet in diameter, native of the interior of Guiana. Its wood is light, durable, and used for the inside fittings of houses, furniture, and bookcases, its highly aromatic odour having the property of preserving the books from insects. The Indians prefer it to any other wood for making canoes. One used by Schomburgk was 42 feet long and $5\frac{1}{2}$ feet wide, and was hollowed out of a single trunk, and although much used by being pulled over cataracts, was, at the end of four years, as sound as when first purchased. The resin of this species is known as Carana resin. The genus *Icica* consists of a number of species chiefly natives of tropical America and the West Indies, all of which are odoriferous, and yield gum-resins, which are sometimes used as incense.

Cedrat. (See Citron.)

Cedron (*Simaba Cedron*), a small slender tree, 12 to 16 feet high, of the Quassia family (Simarubaceæ), native of Panama, New Grenada, and Darien. It has winged leaves, and fruits about the size of a swan's egg, covered with downy hairs like a peach. It contains a single seed, which when perfect separates readily into two cotyledons; they are white, and somewhat larger than almonds; they are very bitter, and are highly valued by the natives as a cure for snake-bites, and as a bitter tonic are considered by some to be nearly equal to quinine in cases of fever, in consequence of which most of the natives carry a seed with them for use if required. The tree, with its fruit and uses, is

fully described in Hooker's *Journal of Botany* by Purdie and Seemann, botanical collectors for Kew, who had the opportunity of seeing the tree growing, the first in New Grenada and the second in Darien, between the years 1843 and 1850, and by whom living plants were introduced to Kew. It was taken to Trinidad by Purdie.

Ceiba Tree. (*See* Silk Cotton Tree.)

Celery (*Apium graveolens*), a biennial herb of the Carrot family (Umbelliferae), native of various parts of England and throughout Europe, also widely dispersed over the temperate regions of the southern hemisphere. In its wild state it is, to a certain degree, poisonous, but under cultivation and by bleaching its leaf-stalks become a wholesome salad and pot-herb. Sir Joseph Hooker, in the *Flora Antarctica*, says he could see no difference between the European form and the Southern, but the latter in its wild state was mild, and was constantly used by the ship's crew; this, he thinks, may be due to the less degree of sunshine, for which blanching is the substitute.

Celery-leaved Pine (*Phyllocladus rhomboidalis*), a tree of the Yew family (Taxaceae), native of Tasmania. A curious tree, having no leaves; the terminal branches are united and flat, performing the functions of leaves. It attains a height of 30 to 40 feet; the wood is hard, and used for many purposes.

Centaury, Common (*Erythræa centaurium*), an annual herb of the Gentian family (Gentianaceae), native of this country, common throughout Europe, varying from a few inches to a foot in height, and from a single to a much-branched stem; it has pretty pink flowers. The whole plant is intensely bitter, and is extolled for its medicinal properties by the ancient physicians Galen and Dioscorides, as also by the old herbalists of this country.

Centaury, Australian (*E. australis*), is a pretty little plant, with pink flowers, growing in the fields about Sydney; it is very similar to the European species, but is by botanists considered distinct. It is collected and used as a tonic, and is considered valuable in cases of dysentery and diarrhoea.

Centaury, Californian (*E. chironoides*), a plant similar in habit of growth to the preceding, native of California, where it is called Canchalagna, and is held in high repute as a bitter tonic. It is also found in Mexico, and has by Grisebach, in his *Flora of the West Indies*, been separated from *Erythræa* as a distinct genus under the name of *Gyandra*.

Cereus, the name of a section, or by some considered a genus of the Cactus family (Cactaceæ). It contains—1st, the well-known domestic window-plant, the Creeping Cereus (*C. flagelliformis*), native of Peru, recorded to have been introduced into this country in 1690. 2d, Night-flowering Cereus (*C. grandiflorus*). This, like the preceding, is a slender, trailing or climbing species. It is a native of Jamaica and other West Indian islands, and was early introduced. It is remarkable for its large white and partially straw-coloured flowers, which open in the evening and close early in the morning. It is, however, surpassed by *C. MacDonaldiæ*, a native of Honduras, introduced to Kew about thirty years ago, the flowers of which are also white, and only of a few hours' duration, and when fully expanded are more than a foot in diameter, consisting of numerous petals, thus vying with the Victoria Lily in size; and when eight or ten flowers are open in one night (as with a plant at Kew) the sight is magnificent. (See Torch Thistle.)

Ceylon Moss (*Plocaria lichenoides*), a plant of the Seaweed family (Ceramiaceæ), a delicate white seaweed found growing upon rocks in the Indian and Malayan Seas, and known also by the Malayan names of Agar Agar, or Agal Agal. It is largely collected, and made into a jelly, and forms an extensive article of trade at Singapore and in Borneo, constituting part of the cargo of the Chinese junks on their return voyages. It is also used as a varnish, more especially for the paper employed in the manufacture of Chinese lanterns, to which it imparts a yellow tinge. When boiled with sugar it forms a sweet jelly, much resembling that made from calves' feet, and is highly esteemed both by Europeans and natives for the delicacy of its flavour.

Another species of *Plocaria* (*P. tenax*) is also of great importance as a food plant to the Chinese. It is closely allied to the preceding, and native of the same seas. In the Bay of Siam are caves and precipitous rocks on which the sea-swallows build their glutinous nests, which are made from the fronds of the latter species, and highly prized by the Chinese. The nests are collected at regular seasons of the year, and form an extensive article of commerce with China, and are largely used as food in the preparation of soups and jellies; they are also used as size and gum, and believed to be the chief ingredient of the Chin-Chin glue. In collecting these nests the natives are exposed to many perils in mounting and descending the rocks, and lives are occasionally lost.

Champaca, a name in India for *Michelia Champaca*, a large tree of the Magnolia family (Magnoliaceæ); its flowers are like an unfolded tulip of a deep yellow colour, and highly fragrant; they are used to ornament the hair, both of men and women; the bark is an aromatic bitter tonic, and used medicinally; it yields the oil called Sumpunghée. An allied species, *M. Cathcartii*, is a large tree, native of Sikkim; it is conspicuous in April for its abundance of white blossoms, which in the distance give it the appearance of being covered with snow.

Champignon. (See Fairy Rings.)

Chānay Kélengu, a name in India for the tubers of *Tacca pinnatifida*; in Travancore it is cultivated, and grows to a large size, forming an important article of trade. (See Pi.)

Chara, the name of a genus of the order Algæ, of the class Cryptogamia of Linnæus, and the type of the Limewort family (Characeæ) of modern botanists. They consist of small fresh-water plants, having articulated stems and branches, which grow in whorls, either transparent or coated with carbonate of lime. The organs of reproduction consist of globose, nut-like bodies of two sizes, covered by spiral tubes, which give them a striated appearance.

This singular family comprises about thirty described species, found in stagnant water in most parts of the world. They grow

very rapidly, and soon fill shallow waters, sometimes forming great masses, which decay and become offensive, causing malaria in many districts, as in the Pontine Marshes near Rome. They have no known uses, and must only be regarded as botanical curiosities, more especially as they beautifully illustrate the circulation of the sap, such being readily seen by the aid of a microscope in the joints of their stems. *Nitella translucens* is best suited for that purpose, but as *Chara vulgaris* is the most common, it may be substituted. By shutting up a portion of this species in a phial containing a little water it will grow, adhering to the sides of the glass, and be perfectly free from the lime, and on being placed under the microscope the circulation is clearly seen. There are six species natives of this country.

Charlock. (*See Mustard.*)

Chaulmoogra Oil, the name of an oil obtained from the seeds of *Gynocardia odorata*, a tree of the Indian Plum family (Flacourtiaceæ), native of India, common in the hot valleys of Sikkim, attaining a height of 30 or 40 feet, having glossy, entire, alternate leaves; the fruits are globular, ash-coloured, the size of a shaddock, and enclose numerous seeds embedded in pulp, which contain an oil used by the natives as a remedy for cutaneous diseases, and also for internal complaints. Within the last few years it has been introduced into this country, and is found beneficial in rheumatic affections, sprains, diseases of the joints, etc.

Chaw Stick (*Gouania domingensis*), a flexible-stemmed shrub, climbing by the aid of tendrils to a great length, belonging to the Buckthorn family (Rhamnaceæ). In Jamaica, the stems, which are about the thickness of the finger, and fibrous, are cut into short lengths and used for tooth-brushes, as they whiten and preserve the teeth better than any tooth-powder; pieces of it put into liquor cause fermentation, and impart a pleasant bitter flavour to cooling drinks.

Chayroot, a name in India for *Oldenlandia umbellata*, a weedy annual of the Cinchona family (Cinchonaceæ), wild, and

extensively cultivated in India. Its long, slender roots yield a blue dye, which by different mordants is changed from pale to a very deep red, with which turbans and handkerchiefs are dyed.

Cheese Rennet, a common name for *Galium verum*, a perennial of the Madder family (Rubiaceæ), native of this country, growing in meadows and roadsides, and conspicuous for its pale yellow flowers; it has been long known to have the power of curdling milk. The roots are of a bluish colour, and yield a dye equal to madder, for the making of which it is extensively collected.

Cherimoyer, the name of the fruit of *Anona Cherimolia*, a tree of the Custard Apple family (Anonaceæ). A loose, spreading tree attaining a height of 20 to 25 feet. It is a native of, as well as cultivated in, most parts of tropical America, and also in Jamaica and other West Indian Islands. The fruit is somewhat oblong, 2 to 5 inches in diameter, of a light-green colour, with white pulp and a few black seeds; it is highly esteemed, and considered by some to be the finest fruit in the world.

Cherry (*Cerasus vulgaris*), Wild Cherry or Gean (*Cerasus avium*), moderate-sized trees of the Plum family (Drupaceæ). Both are found wild in this country, and are widely distributed over Southern Europe and the temperate countries of Western Asia. It is generally admitted that these are the parents of the numerous fine varieties of cherries now cultivated. It is also thought by some botanists that the supposed species *C. duracina*, *C. Juliana*, and *C. caproniana*, said to be natives of Southern Europe, have, by cross breeding, contributed to produce some of the fine sorts of cherries.

Cherries being a favourite early fruit are extensively cultivated in this country, large cherry orchards being common in many Southern counties; they are not only valued as dessert fruits, but are made into tarts and pies, and preserved in various ways. In Germany a spirit called Kirschwasser is made from a small black variety, as is also in France the liqueur called Maraschino, and Ratafia from a variety of the morello cherry. In the preparation of these liqueurs the fruit, stone, and kernel

are pounded; the latter contains prussic acid, which gives flavour to the liqueurs. Cherry tree wood is highly valued by cabinet and musical instrument makers.

Cherry, Australian (*Exocarpus cupressiformis*), a small tree of the Sandal-wood family (Santalaceæ). It has numerous green, wiry, rigid or filiform, apparently leafless branches collected in a dense conical head, and the leaves reduced to minute alternate scales. It is found in Queensland, New South Wales, Victoria, Tasmania, and South and West Australia. The wood is hard, and valuable for gun-stocks, axe-handles, etc.

Cherry, Barbadoes.—*Malpighia glabra* and *M. puniceifolia*, two small trees of the Malpighiad family (Malpighiaceæ), natives of the West Indies and many parts of tropical America. They are favourite trees with the natives, who plant them near their dwellings as hedges, and also for the sake of the fruit, which is about the size and appearance of a cherry. The common name is derived from the fact of the plants being found originally in Barbadoes.

Cherry, Bird (*Cerasus Padus*), a deciduous shrub or small tree of the Plum family (Drupaceæ). When grown with a single stem it often attains a height of 20 to 30 feet. It is a native of this country, and widely spread throughout Europe and the temperate regions of North-West Asia. The fruit is small, black, and not palatable; it is used by some for flavouring brandy and home-made wines. In Sweden, Lapland, and some parts of Russia, the bruised fruit is fermented, and yields a strong kind of spirit. The wood is hard and yellow, and has a disagreeable odour; it is highly valued by cabinet-makers. The Bird Cherry is represented in America by *C. virginiana*, *C. caroliniana*, and others, which are grown in shrubberies in this country.

Cherry Laurel (*Cerasus Laurocerasus*), an evergreen shrub of the Plum family (Drupaceæ), native of Armenia and countries bordering on the Black Sea. Introduced and cultivated in this country. Every part of the Cherry Laurel contains prussic acid; its leaves are used to give the peculiar flavour of that acid to

culinary dishes and drinks; care is therefore necessary not to use them in excess, as fatal consequences are known to have occurred. The leaves contain a volatile oil, which forms the bases of Laurel Water; it is highly poisonous, and is sold by druggists for killing flies; several instances are on record of its having been criminally used for poisoning.

Chervil, Garden (*Anthriscus Cerefolium*), an annual herb of the Carrot family (Umbelliferae), native of Europe, but now become wild in some parts of England, and has been cultivated as an aromatic pot-herb for more than two centuries. *Myrrhis odorata*, called Great Chervil or Cicely, is also cultivated.

Chestnut, Cape (*Calodendron capense*), a beautiful tree of the Rue family (Rutaceae), native of the Cape of Good Hope. It has broad, elliptical leaves and snowy white flowers. The fruit is a five-celled, five-angled, prickly capsule, having some resemblance to the fruit of the Sweet Chestnut, hence its name Cape Chestnut. The seeds are shining black. The tree was introduced to this country in 1789; a specimen in the Palm-house at Kew was in 1857 25 feet high, with a diameter of 5 inches near the base.

Chestnut, Horse (*Aesculus Hippocastanum*), a large, well-known tree of the Soapberry family (Sapindaceae), native of the North-West Himalayas or Caucasus; it has migrated westward, but there is no evidence of its having been a tree of Mount Lebanon, Palestine, or any part of Western Syria, in the time of Solomon, but most probably it found its way to Europe by way of the Caucasus and Armenia. It is recorded to have been cultivated in this country in the first quarter of the seventeenth century. Its principal use is as an ornamental tree for parks, pleasure-grounds, roadsides, and avenues. The celebrated avenue in Bushey Park, planted by William III., affords a fine example of the adaptability of the Horse Chestnut for ornamental planting. It is not particular as to soil, and generally produces yearly an abundant crop of nuts, which are not, however, utilised for any special purpose in this country, but in France they are largely employed in the manufacture of

starch. An oil is also expressed from the nut which has been recommended in rheumatism. The nuts are somewhat saponaceous, and after being macerated in water are reported to have been used in some parts of Ireland to whiten linen. In Turkey they are ground with other food and given to horses, hence the name.

Chestnut, Moreton Bay (*Castanospermum australe*), a large tree of the Bean family (Leguminosæ), having shining winged leaves; a native of Queensland, where it is said to attain a height of 70 to 100 feet. It takes its name from the seeds, which are similar to and of the size of Sweet Chestnuts. They are contained in a cylindrical, stiff pod, 6 or 7 inches in length. They are eaten by the natives, but are unpalatable to Europeans.

Chestnut, Sweet (*Castanea vulgaris*), a large, spreading branched tree of the family Cupuliferæ. It is supposed to be a native of Northern India throughout the range of the Himalayas. If so it must have early migrated westward, as it is common throughout the whole of Western Asia, the countries of the Mediterranean and Central Europe; even in the Alps it has the appearance of being an original native. It has been supposed also by some to be a native of Britain; but that is not likely, as its fruit only ripens in favourable seasons, and there is no trustworthy account of any natural forests having at any time existed; on the contrary, some suppose it to have been introduced by the Romans. It is now common in parks and gardens, and some trees are recorded as being very old and having attained a large size. In some places it is grown as a brushwood for hoop-making. As already stated, the nuts ripen to perfection in favourable seasons, but the quality and quantity is small compared to the importations from the Continent, chiefly from France, Portugal, and Spain. In Italy and Spain the nuts are ground into meal, and it forms an important article of food for the poorer classes. In saying it is a native of the whole of Western Asia, Palestine and Western Syria generally must be excluded; for although the chestnut tree is mentioned in the Bible in the time of Jacob, nevertheless, even in the time of

Solomon, and up to the present, there is no evidence in proof that the chestnut tree grew in Palestine in early times, it being considered by Bible commentators that the plane tree (*Platanus orientalis*), which is common in Palestine, represents the chestnut tree of Jacob.

Chestnut, Tahiti (*Inocarpus edulis*), a large tree, originally placed in the Spurge Laurel family, but by modern botanists considered to belong to the Cæsalpinieæ section of Leguminosæ. It is also called the South Sea Chestnut, being common in the tropical islands of the South Sea. The stem is 60 to 80 feet high, and when young is fluted like a Grecian column, and when old these projections become buttresses extending some distance all round the tree, and gradually lessening upwards to the first branches. It has a thick crown, furnished with simple, oblong, leathery leaves of a dark-green colour. The flowers are inconspicuous; the fruit, a pod, is flat and kidney-shaped, containing seeds resembling chestnuts in taste. They are much esteemed either baked or boiled, and eaten entire, or grated for making bread and puddings. In the several islands there are at least eight different names for it.

Chestnut, Water, also called Water Caltrops (*Trapa natans*), an aquatic plant belonging to the family Onagrariaceæ. It is a native of Southern Europe, and has creeping, floating stems, producing hair-like roots, from which rises a cluster of triangular, toothed, floating leaves with swollen foot-stalks which buoy them up. The flowers are small. The lobes of the calyx two or four, increasing in size, and with its tube involving the ovary, which becomes a hard, horned fruit about the size of a chestnut. They contain much farinaceous matter, and form a considerable article of food. In Italy they are known by the name of Jesuit Chestnuts, and in France as Water Chestnuts. In Cashmere the seeds of *T. bispinosa* form an important article of food to a large population. *T. bicornis* is also extensively used for food in China under the name of Ling. The stiff, horn-like projections of these fruits convey to the mind the idea of Caltrops.

Chia, the name in California for a mealy preparation made of the seeds of *Salvia columbaria*, a herb of the Mint family (Labiatae). It is cultivated for its seeds, which are roasted, ground, and mixed with water. When the powder swells to several times its original bulk, becoming a mucilaginous mass, it is sweetened, and forms an important article of diet, the taste being similar to that of linseed meal. It is also prepared thin, and used as a drink. It is highly valued as a demulcent, in the same way as linseed is in this country. Seeds of Chia, it is said, have been found in old graves, showing that it was cultivated in early times by the Mahua race of Mexicans.

Chica, a pigment derived from the maceration in water of the leaves of *Bignonia Chica*, a tall climber of the Trumpet flower family (Bignoniaceae), native of the upper countries of the Orinoco. It is of a red colour, and is a highly important article in the toilet of the Indians, who use it to paint parts or the whole of their bodies. The trade in Chica is a monopoly of the missionaries, and the article is sold at a high price, so that it is only the wealthy Indians who can afford to smear the whole of their bodies with it. It is common to hear one say of another—"That man is so poor that he has not enough to paint half his body."

Chick Pea, an annual of the Bean family (Leguminosae), cultivated in India for its seed, which when ground into meal forms an important article of food called Gram.

Chicory (*Cichorium intybus*), a hard perennial of the Composite family (Compositae), native of Britain, growing by roadsides and waste places, particularly in calcareous soils. It has a strong thick tap-root, and produces branching stems 2 to 3 feet high, bearing pretty blue flowers. It is cultivated as a salad plant, the young leaves being blanched like endive, and in this way is largely used in France, but is chiefly valued for its roots, which are roasted, ground, and mixed with coffee for the purpose of imparting an agreeable flavour. It is extensively cultivated both in this country and on the Continent. From Belgium and Holland the best qualities are now imported. Its frequent use

for mixing with coffee as an adulterant has led to an Act of Parliament being passed prohibiting its sale except alone or when definitely stated. It possesses diuretic qualities. In 1880 the quantity imported amounted to 145,457 cwt.

Chignite. (*See* Butter Tree.)

Chillies. (*See* Capsicuin.)

China Grass. (*See* Grass Cloth.)

China Root, the thick rhizome of *Smilax China*. (*See* Sarsaparilla.)

Chinese Olive, a name for the fruit of *Canarium commune*, a wing-leaved tree of the Myrrh family (Amyridaceæ), native of Java, Moluccas, and Malayan Islands generally. Cultivated for its fruit, a three-sided drupe, from which an oil is expressed, used as a condiment when fresh, and for burning in lamps. A kind of gum, like Gum Elemi, exudes from the stem.

Chirata (*Ophelia Chirata*), a slender branching annual of the Gentian family (Gentianaceæ), 2 to 3 feet high, with yellow flowers; native of India, where the stems are held in high repute as a tonic and febrifuge both by native and European practitioners. Allied to Chirata, and possessing the same qualities, is *O. elegans*, native of the north of India, where it is made up into bundles a foot in length, about as thick as a man's arm, and sent to the bazaars. Its native name is Salaras, and it is said to be exported in considerable quantities.

Chittagong Wood. (*See* Mahogany, Indian.)

Chives (*Allium schænoprasum*), a cultivated pot-herb of the Lily family (Liliaceæ), allied to Garlic; native of the North of Europe. It has hollow, grass-like leaves, and is cultivated in kitchen gardens.

Choco, a name in the West Indies for *Sechium edule*, a tendril climber of the Gourd family (Cucurbitaceæ). It has a large, fleshy tuber resembling a yam, and sometimes weighing as much as 20 lbs. It is eatable when cooked, but is not very palatable. The fruit is oblong, gourd-like, 4 inches in length, covered with small, blunt tubercles; when ripe, of a yellowish colour. These fruits may sometimes be seen in Covent Garden

Market. They are largely cultivated in Jamaica for feeding hogs.

Chocolate Nut or Bean (*Theobroma Cacao*), a small tree of the Chocolate Nut family (Byttneriaceæ), native of tropical America, now widely distributed, and cultivated in most tropical countries. It grows from 16 to 18 feet high, and has broad, oblong, pointed leaves of a thin texture. The flowers are small, and produced on the old stem and branches, and in time are followed by a pod-like fruit, 6 to 10 inches in length, and 3 to 5 in girth, more or less marked with longitudinal ribs, and containing 50 or more seeds. When ripe these seeds, which are covered with mucilage, are taken from the fruit and are allowed to undergo a slight fermentation, after which they are dried in the sun, when they acquire a brown colour, and become the Chocolate Bean or Nut of commerce; roasted, and split or broken, they are the Cocoa Nibs of the shops; on being ground they become Cocoa Powder, and thus made into paste form cakes called Chocolate, which is generally flavoured with vanilla and sugar. In analysing some samples of chocolate some years since, they were found to be adulterated with red earth. This was afterwards attributed to the beans being sprinkled with water and dusted with red earth to give them a brighter appearance and enhance their value. Chocolate or cacao seeds come to Europe principally from Brazil, Venezuela, New Grenada, and Trinidad. Above 2000 tons are annually imported. The first notice of cacao in this country is contained in a newspaper dated 16th June 1659. The use gradually increased, and in 1880 the quantity entered for home consumption was over 10,000,000 pounds.

Chola. (*See* Gram.)

Chooree. (*See* Butter Tree.)

Chowlee, a name in India for *Dolichos sinensis*, by some called *Vigna sinensis*. An annual climber of the Bean family (Leguminosæ), cultivated in India for its pods, which are two feet in length, and contain a number of pea-like seeds, which form a considerable article of food. The young green entire

pods are also used. Other species of *Dolichos* are cultivated as food plants.

Christ's Thorn.—Several plants are accredited with the honour of having formed the Crown of Thorns; some Bible commentators consider it to have been made of the prickly shoots of the bramble; others, that it was one of the three more formidable spiny shrubs—*Paliurus aculeatus*, *Zizyphus spina Christi*, or *Z. vulgaris*. They all belong to the Buckthorn family (Rhamnaceæ), and are widely spread throughout the Mediterranean regions and Palestine; they are strong-growing shrubs, with large slight hooked spines, forming impenetrable thickets, often climbing up other plants and holding on by their hooks, but when growing singly they form trees, especially *Z. spina Christi*. *Z. vulgaris* bears the fruit called Jujube; it is cultivated in gardens, and may therefore be considered to have been the most readily obtainable for the soldiers to form the Crown of Thorns. (*See Lotus*.)

Christopher, Herb. (*See Baneberry*.)

Chrysanthemum, a name given to a genus of herbs of the Composite family (Compositæ) represented in this country by the Ox-eye Daisy (*C. leucanthemum*) and the Corn Marigold (*C. segetum*); but the most conspicuous species of the genus is *C. sinense*, a native of China, introduced about 1764, and cultivated by Philip Miller at Chelsea. It was long kept as a greenhouse plant, but having been proved to be hardy, and many varieties having been introduced and also raised in this country, it has now become a favourite in all gardens, and Chrysanthemum shows now yearly take place during the flowering season, which is in the autumn.

Chupa-Chupa, a name in New Grenada for the fruit of *Matisia cordata*, a tree of the Sterculiad family (Sterculiaceæ). Although never exceeding 60 feet in height, its broad cordate leaves and curious mallow-like flowers, succeeded by a cluster of fruit as if stuck on its trunk and larger branches, make it one of the most interesting of tropical trees; the fruit is of an oval form, firm, 5 inches in length and 3 broad, covered

with a silky ash-coloured down; it has a fleshy interior, divided into five cells, each of which contains a single angular seed about an inch in length. The celebrated traveller Humboldt describes the taste of the fruit as being like that of the apricot, and that it is carefully cultivated in Peru and New Grenada; and W. Purdie, botanical collector in New Grenada for Kew in 1845, says it is among the finest of tropical fruits, its flavour is more like that of the mango, better even than the apricot. It was introduced to Jamaica through Purdie, and Mr. Wilson, for some time director of the Jamaica Botanic Garden, in a letter to the writer says: "It is now a tree 20 or 25 feet high, and last year produced seven dozen fruits, one of which weighed two pounds two ounces; it is full of stringy fibre, and not a good fruit for dessert." Since then the tree has become common in Jamaica.

Chusan Palm (*Chamærops Fortunei*), a fan-leaved palm, native of Chusan and the north of China, attaining a height of 12 or more feet. The sheath at the base of the leaves becomes with age strongly fibrous, similar to that of the Piassaba of tropical America. The agricultural labourers in the north of China make coats and hats of the fibrous substance, which has a very Robinson-Crusoe-like appearance; but is good for keeping out the rain. It is also used for making ropes and cables, and is very strong and durable, even under water. This palm was introduced into this country in 1844, and is hardy in sheltered situations in southern counties. It was first supposed to be *C. excelsa* of Thunb., a palm similar in habit, native of Japan, and applied to similar purposes, of which, about fifty years ago, a few plants were introduced to Holland, one being in 1837 sent to Kew, and is now 12 feet high, with a girth of 1 foot 7 inches. One of the originals sent by Mr. Fortune to Kew in 1844 was planted in the front of the royal residence, Osborne, Isle of Wight; in 1881 it attained the height of 14½ feet, and girth 3 feet; spread of leaves, 9 feet across.

Cicely. (See Chervil.)

Cinchona, the name of a Linnæan genus belonging to the

natural order Cinchonaceæ. It consists of a number of species of trees seldom exceeding 40 to 50 feet in height. The leaves are opposite, simple, entire, stipuled at the base; flowers small, in cymose panicles; seeds numerous, small, winged. The plants are natives of the Andean regions of Peru, Bolivia, and New Grenada. This genus has come into considerable repute consequent on many of its species yielding the important medicine called Quinine—the most powerful agent in the cure of fevers. It is obtained from the bark of the trees in greater or less quantity in different species, the healing powers of which were early known to the Spanish Jesuits; and the Countess de Chinchon, lady of the Viceroy of Peru, having been cured of fever by it, led it to become known in Spain in 1638 under the name of Jesuits' Bark, and for many years the ground bark and port wine was a favourite medicine. This, however, in process of time gave way to the active principles of the bark being prepared in the form of alkaloids, the most valuable of which is called Quinine; it is a bitter, white crystalline powder. From the bark, by chemical manipulation, certain other alkaloids are obtained, known as Cinchonine, Cinchonidine, Quinidine, etc. The great demand for quinine, and its high price, led to a great increase in the bark trade of South America, and, in order to obtain it readily, bark collectors made no scruple in cutting down the trees, and, as the respective Governments took no steps to prevent this or to make fresh plantations, it was feared that in time the valuable medicine would be entirely lost. In 1839 the late Dr. Royle suggested that it would be advisable to introduce the trees yielding quinine into India. This suggestion lay in abeyance for at least twenty years. In 1852 it cost the Indian Government £7000 for quinine, and in 1857 £12,000; this, and the fear of the plants becoming extinct, led the Indian Board at once to make arrangements to attempt the introduction of Cinchona trees into India, and in 1859 the Secretary of State for India appointed Mr. Clements Markham of the India Office to superintend all the necessary arrangements for the above purpose. Accordingly, two expeditions were arranged—

one headed by Mr. Markham himself, assisted by a gardener, the other by Mr. Richard Spruce, a botanical collector, then residing in New Grenada, to whom Robert Cross, a gardener from Kew, was sent out as assistant. To the above (after much peril) is due the successful introduction of the *Cinchona* plants into India. To the latter, however, the greatest share of credit must be given, he having during the last twenty years been despatched four times by the Indian Government to the different Andean regions in order to obtain *Cinchona* plants known to be richest in quinine, and in these expeditions he has been eminently successful, and is now (October 1880) on his way to India with plants of the kind called Grey Bark. To give a special account of the various expeditions would occupy a volume. This, indeed, has been done; and, while the present work is in preparation, Mr. Clements Markham has published an account under the title of *Peruvian Bark*, extending from the year 1860 to 1880.

It will suffice for our purpose to say that the undertaking has been crowned with complete success, and that the quinine-yielding trees in the eastern hemisphere are now counted by millions, and their bark forms an important article of trade. The principal Government plantations are at Ootacamund in the Nilgiris and Darjeeling in Sikkim, also at Ceylon and Mauritius; the Dutch have likewise extensive plantations in Java and other islands. In the West Indies plantations have also been formed in Trinidad and Jamaica. The names of the principal cinchona barks of commerce are—1. Red Bark (*C. succirubra*), New Grenada; 2. Calisaya Bark (*C. Calisaya* and *C. Boliviana*), Bolivia; 3. Loxa Crown Bark (*C. Condaminea*, or *officinalis*) Loxa; 4. Cuenca Bark or Yellow Calisaya (*C. species?*), Ecuador; 5. Pitayo Bark (*C. Pitayensis*), near Popayan; 6. Calisaya of Santa Fé, or Soft Columbian Bark (*C. lancifolia*); 7. Carthagena or New Grenada Bark (*C. species?*), New Grenada; 8. Grey Bark (*C. peruviana*).

Cinnamon, the aromatic bark of *Cinnamomum zeylanicum* of the Laurel family (Lauraceæ). It is a small tree, with willow-

like branches and alternate, oblong, elliptical, smooth, entire leaves, with longitudinal veins running from the base to the apex; flowers inconspicuous; fruit a small berry. The Cinnamon is a native of Ceylon, India, Malacca, and islands of the Malayan Archipelago generally. By making longitudinal incisions the bark readily separates from the branches, and rolls up in the form of a pipe about the size of the finger, and of various lengths, and when scraped and dried is of a brown colour, and is the Cinnamon of commerce, which is of different qualities according to the countries from whence it comes. The best is cultivated in Ceylon. The Cinnamon tree is known under a great number of varieties, producing Cinnamon of varying qualities. The bark of *C. Cassia*, known as Cassia or Cassia lignea, is thicker and stronger in flavour, and is much used to adulterate genuine Cinnamon; this species also furnishes some of the Cassia buds, which consist of the unexpanded flower-buds. Cinnamon is chiefly used as a condiment, and for flavouring confectionery.

Citron (*Citrus medica*), a thorny, much-branched, small tree of the Orange family (Aurantiaceæ), attaining a height of 8 to 10 feet; it has shining laurel-like leaves of a pale-green colour, and sweet-smelling white flowers; the fruit is oblong, 5 to 6 inches in length, with a rough yellow rind; the pulp is white and edible, very acid, but pleasant prepared as a sweetmeat; of one kind a conserve is made. The oil called Citron or Cedrat Oil is obtained from the rind of the fruit. It takes the name *medica* from the country of the Medes, where it is described by Theophrastus as having been cultivated more than three hundred years before the Christian era. It appears to have been grown by the Jews in Palestine after their return from the Babylonian captivity, the fruit being used in the ceremonies of the Feast of Tabernacles, and it continues to be so used at the present day. According to Pliny, it was known in Rome in his time.

Citronella. (See Lemon Grass.)

Clearing Nut, a name given in India to the seeds of *Strychnos*

potatorum, a small tree of the *Nux Vomica* family (*Loganiaceæ*); native of India. It has hard wood, which is used for various economic purposes; but it is most remarkable for its fruit, which is black, about the size of a cherry, and contains one seed. The seeds are dried, and then used to clear muddy water, which is effected by rubbing one of them round the vessel that is to contain water, which, being then poured in, quickly becomes clear, but by what agency is not known to us.

Cloudberry. (*See* Bramble.)

Clove, the name of the well-known, sweet-smelling garden flower, the Clove Pink (*Dianthus caryophyllus*), of which the Carnation or Gilliflower is a variety. It is a grass-leaved herbaceous plant of the Pink family (*Caryophyllaceæ*). Its name is derived from the French word "clou," English "clout," a nail, from the fancied likeness of the flower of the Clove to a broad-headed nail; and the specific name *caryophyllus* appears to have been given by Tournefort (a French botanist, who died in 1708) or by some earlier botanist, the grass-like leaves of the Clove being likened to many of the short-leaved species of the genus *Carex* and its allies, the leaves of which are hard with sharp edges, often when incautiously handled causing wounds difficult to heal, termed Caries, hence the word *caryophyllus*. This word is, however, not restricted to the Clove Pink, for in consequence of the dried flower-buds of a tree, native of the Moluccas, being in the form of a nail, they are also called Cloves, and although there is no resemblance between the Clove Pink and the Clove of the Moluccas, nevertheless Tournefort's name of *Caryophyllus aromaticus* was adopted by early botanists for the well-known spice called CLOVES, which are the unexpanded dried flowers of a tree of the Myrtle family (*Myrtaceæ*), attaining a height of 20 or 30 feet, with smooth, laurel-like, elliptical leaves, 3 to 5 inches in length, and flowers produced in bunches (*corymbs*), which are collected before opening by beating and shaking the trees; the foot-stalks being jointed, they readily part, and are caught on cloths spread below, and after drying constitute the well-known Cloves of

the shops. The Clove presents a singular history of monopoly by the Dutch, who restricted the cultivation of the plant to the island of Amboyna, and vast quantities of Cloves were destroyed by them at Amsterdam in order to sustain a certain price. In time, however, the plant was introduced to other islands, and is now cultivated in Zanzibar, India, Ceylon, Mauritius, and the West Indies. The Clove tree is known by modern botanists under the name of *Eugenia caryophyllata*.

Clove Bark (*Dicypellium caryophyllatum*), a large tree of the Laurel family (Lauraceæ), native of Brazil. The bark is made up in rolls of several layers, 2 feet in length, and about an inch in diameter. It has the nature and flavour of cinnamon, and when ground occasionally forms one of the ingredients of some mixed spices.

Clover (*Trifolium pratense*), a herb of the Bean family (Leguminosæ); the common red clover extensively cultivated as cattle food, of which there are several varieties, by some botanists considered as distinct species, the principal being Zigzag Clover (*T. medium*), Carnation or Scarlet Clover (*T. incarnatum*), Alsike Clover (*T. hybridum*). The White or Dutch Clover (*T. repens*), well known as a cultivated fodder plant. *T. pennsylvanicum*, native of the United States, resembles the White Clover; it is extensively grown in this country, large quantities of seed being annually imported from America.

Club Gourd. (*See* Bottle Gourd.)

Club Moss, a common name for different species of *Lycopodium*, a genus of Cryptogams of the family Lycopodiaceæ, of which there are six species, natives of Britain, found abundantly in moorland bogs and heaths, both low and elevated. They are by rustic practitioners considered to possess medicinal properties. A decoction of *L. clavatum* is used for a disease of the hair called *Plica polonica*. The spores of this species are like fine dust (usually called pollen), highly absorbent, and have been used to prevent excoriation in the skin of young children. This dust is highly inflammable, and large quantities are collected called Vegetable Sulphur, and at one time was used for producing arti-

ficial lightning in theatres ; it makes a slight explosion without producing much heat. In Germany it is called **Witches**.

Cob Nut. (*See Hazel.*)

Coca (*Erythroxylon Coca*), a shrub of the Coca family (Erythroxylaceæ), native of New Grenada and Bolivia. It has oblong lanceolate leaves, and attains a height of 5 to 6 feet. It is not only found abundantly wild, but is also cultivated for its leaves, which are universally chewed by the Indians, both men and women. It is very stimulating, and its use enables them to do hard work with little food for several days, and when food is taken it does not affect the digestive organs. After partaking of their morning meal they stuff a loose handful of leaves into their mouths with a little calcined lime ; a few fresh leaves are added during the day, which enlarges the cheek, giving it the appearance of being swollen. It is not ascertained whether its excessive use shortens life, but aged Indians have been seen chewing Coca in a state of quietness, conveying the idea that they were asleep. Experiments have been made upon it lately, and much has been written in medical journals respecting its effects.

Coca, Mexican, a name given in the Southern States of North America to *Richardsonia scabra*, a perennial decumbent herb of the Madder family (Rubiaceæ), widely distributed throughout Peru, tropical America, Mexico, and the West Indies ; also throughout the Southern States, especially in Alabama. Its succulent leafy stems form a nutritious fodder, equal to clover, for horses, cattle, and sheep. Its roots are used in medicine as a substitute for Ipecacuanha. (*See Ipecacuanha.*)

Cocculus Indicus, the common name of the berry-like fruit of *Anamirta Cocculus*, a climbing shrub of the Moonseed family (Menispermaceæ), native of Ceylon, various parts of India, and the Eastern islands. Its berries are imported into this country to the extent of about 30,000 lbs. annually ; the quantity actually consumed, however, is not known. Its use in medicine is simply in the preparation of an ointment to destroy pediculi, and in some obstinate forms of chronic skin

disease. *Cocculus indicus* is said, however, to be used in large quantities by brewers and publicans for increasing the bitterness and intoxicating powers of malt liquors; but a heavy penalty is inflicted upon those detected in so doing, and upon druggists who supply it to brewers, as it contains an acrid irritant poison, called Picrotoxin. It is also used for what is termed *drugging*, an overdose of it causing death. It is further used as a fly poison.

Cochineal. (See Nopal.)

Cockscomb (*Celosia cristata*), an annual of the family *Amaranthaceæ*, native of India, introduced into this country 300 years ago; the typical form is a branching plant, bearing loose spikes of flowers. The crested head of the garden cockscomb is a monstrosity brought about by cultivation.

Cocoa Nibs. (See Chocolate Nut.)

Cocoa Nut (*Cocos nucifera*), a palm, native of the coasts of tropical Africa, India, Malay, and islands of the Indian and Pacific Oceans. It is generally cultivated throughout all tropical countries, but thrives best near the sea, and requires no special care. The tree varies in height from 50 to 100 feet, and has long winged leaves, the so-called nuts being produced in bunches of 10 to 20 or more together. They are of a triangular form, about a foot long, consisting of a thick coat of fibre, enclosing a hard shell, which, with its contents, is known as the Cocoa Nut. It is commonly said that the uses of the Cocoa Nut are as numerous as the days in a year, affording food, drink, domestic utensils, and materials for building and thatching. In some parts of India and other countries, the white albumen of the nut forms nearly the entire food of the natives, and the white fluid or milk serves them for drink. It also yields wine and sugar. Cocoa-nut Oil is obtained by pressing the albumen. When fresh it is transparent, and is then used in cookery. Large quantities of it are imported into this country under the name of Copra; the thicker portion, called Stearine, being used for making candles, while the clear oil is used for burning in lamps. The well-known substance Glycerine is obtained in the process of purifying Cocoa-

nut oil. Formerly the fibre was used for making coir ropes only, but within the last thirty years it has been manufactured into floor-matting, brushes, and brooms, and is used for stuffing cushions, as well as for many other purposes. The hard shell is made into cups and other domestic utensils. The wood is known as Porcupine-wood.

Cocoa Nut, Double (*Lodoicea sechellarum*).—This may be considered the largest and most remarkable of palms. It is a native of a small group of islands in the Indian Ocean called the Seychelles. It is said to attain a height of 100 feet, its stem being $1\frac{1}{2}$ to 2 feet in diameter, bearing at the summit a crown of fan-shaped leaves. It is remarkable for growing in a socket of a hard woody texture, perforated with holes made by the roots. This curious appendage derives its origin from the cotyledon, which in this palm attains the extraordinary length of 2 feet, growing downwards like a root, having the germ (plumule) seated in its thickened end. When perfect the thick end opens on one side like a sheath, out of which rise the first succeeding leaves of the plant, roots also being produced, which make their exit by piercing the end of the sheath. In time the nutriment of the nut becomes exhausted, and the part of the cotyledon between it and the young plant withers. The latter, however, retains its placental vital connection with the sheath end of the cotyledon, which is henceforth nourished by the plant, and increases in size with its growth, which thus continues seated in the cradle of its birth through life. This formation appears, however, to be common to the palms, but very much more largely developed in the *Lodoicea*. The fruit is a large oblong nut, covered with a thin rind. After the removal of the outer envelope or rind, the fruit has the appearance of two oblong nuts, firmly united together, and often weighs 30 to 40 lbs. They are borne in bunches, each consisting of nine or ten nuts, so that a whole bunch will often weigh 400 lbs. It takes ten years to ripen its fruit, the albumen of which is similar to that of the common cocoa nut, but is too hard and horny to serve as food. The shell is converted into many useful articles by the

natives, but the most important part is the leaves, which are made into hats, baskets, and the like. The demand has of late years become so great that in order to obtain the leaves the trees are cut down, and as no care is taken to form new plantations, it was at one time feared this palm would eventually become extinct. In 1864 the leading botanists in this country petitioned the Government for its protection. By more recent information, however, it appears that in one island alone there are many thousands of trees.

Cocoa Plum (*Chrysobalanus Icaco*), a small tree of the Cocoa Plum family (Chrysobalanaceæ), native of the West Indies, introduced into this country in 1752, and cultivated in the hothouses as a rare plant. It produces a small pulpy fruit, which is made into a preserve, and forms an article of trade.

Cocum Butter. (*See* Gamboge.)

Coffee (*Coffea arabica*), a small much-branched tree of the Cinchona family (Cinchonaceæ), not exceeding 20 feet in height, much resembling a cherry tree, but has a whitish bark, and more slender and horizontal spreading branches. It has opposite leaves, of a light-green colour and elliptical lance-like form, about 6 inches in length. The flowers are in clusters in the axils of the leaves, and are white, like orange-tree flowers, and perfume the air. The young fruit is first of a green colour, but on ripening becomes red, and is about the size of a small cherry, but somewhat oblong, each containing two seeds closely united by their flat sides, which, on the pulp being removed, separate and constitute the Coffee berries of commerce, and when roasted and ground, the Coffee of the shops. The native country of the Coffee tree is supposed to be Abyssinia, where it has been known from time immemorial under the name of Coffa, hence comes Coffee. From Abyssinia it is supposed to have been introduced into Arabia Felix about the end of the fifteenth century, and has been cultivated in the province of Yemen and used as a beverage. About the middle of the sixteenth century its use became known in Constantinople. It was first used in London by a Smyrna merchant, who, in order to have it properly made, brought

with him a Levantine girl, who married his coachman, and in 1652 they opened the first public coffee shop in London. With regard to the history of the introduction of the Coffee tree into America, it is stated that a living plant was obtained by the Dutch and placed in the Botanic Garden, Amsterdam, where it was propagated, and a plant was conveyed to the Dutch settlement of Surinam. One of the Amsterdam plants was in 1714 presented to Louis XIV., by whom it was introduced into Martinique in 1717. From these plants the cultivation of Coffee spread throughout the warm countries of America and the West Indies, also in time in Ceylon and India, where it is now extensively cultivated. The principal supply of Coffee to this country is from the West Indies, British Guiana, Brazil, Ceylon, and India. The Coffee of the shops in course of time became greatly adulterated, the principal adulterant being the ground roots of chicory, which led to an Act of Parliament being passed to make the adulteration of Coffee by chicory, or any other adulterant, a statutable offence. Sixty years ago (1820), when genuine Coffee was high priced (3 to 4 shillings a pound), roasted corn under the name of "Kent's Roasted Corn" was sold in London, and was patronised for some time. The number of Coffee trees in Brazil is computed to amount to 530,000,000, covering a surface of 1,150,000 square acres, and it is calculated that Coffee is now used by 100,000,000 of the human race. In 1880 the quantity of Coffee from all countries imported into this country was 1,555,939 cwts., valued at £7,062,016. Of late years the Coffee crops, especially in Ceylon and India, have become much deteriorated from the ravages of a disease termed the Coffee Blight, which is caused by a fungus (*Hemileia vastatrix*) spreading over the leaves. It first appears with rapid growth within the parenchymatous tissue of the leaf; the perfect fungus is developed on its under-side; its fruit is composed of numerous clusters of orange-coloured sporangia, which protrude through the stomata (that is, the breathing spores of the leaf), and entirely destroy the functions; the trees then become sick, and failure of crops is the consequence. It spreads

rapidly; its first appearance in Ceylon was in 1869, Southern India 1869-70, Sumatra 1876, and in Java 1879. No cure has yet been found for this formidable disease.

Of late years a kind of Coffee has come into special notice called Liberian Coffee, the produce of a tree native of Liberia and West Africa; it is a much stronger plant than the *Coffea arabica*, and is considered to be a distinct species under the name of *Coffea liberica*. Its berries are large, but do not contain so much caffeine as the original species.

Cohune Palm (*Attalea Cohune*), a wing-leaved palm similar in appearance to the cocoa nut, but it does not attain such a great height, and has a thicker stem. It is abundant in Honduras and Darien. The fruit is produced in large bunches, each fruit being about the size of a turkey's egg. The kernel of the nut tastes like that of the cocoa nut, but contains more oil, which is of a finer quality. It is obtained by crushing the nuts. This palm may also be termed a wine palm, the trunk containing a great quantity of liquor, which is obtained by cutting the tree down and making a deep hole near the top, and by slightly raising the butt-end the liquor flows into the hole, and is readily obtained by slipping in a small vessel. This supply continues a considerable time, and forms a cooling drink to passers-by.

Cola Nut (*Cola acuminata*), a tree of the Sterculiad family (Sterculiaceæ), native of Western tropical Africa. It attains a height of 30 to 40 feet, having smooth, entire, oblong, elliptical leaves, 6 to 8 inches in length. The fruit is a follicle containing several nut-like seeds, which are called Cola or Goora Nuts. They form a considerable article of trade amongst the negroes, by whom they are held in high estimation, as they are supposed to give strength, allay thirst, promote digestion, and stay hunger, possessing the same properties as the Coca leaf of tropical America. The tree is now common in the West Indies and Brazil, having been early introduced during the slave trade. Some degree of superstition is attached to it by the negroes; the fetishman or necromancer relies especially upon feeding the spirits with Cola nuts to obtain for his votaries good

health and happiness ; and the nuts form an important portion of the presents of a bridegroom to the bride's father.

Colchicum (*Colchicum autumnale*), a bulb of the Hellebore family (Melanthaceæ), native of the South of Europe. This is rarely found wild, although it is common in gardens. It is known as Meadow Saffron and Autumn Crocus. It has a solid bulbous root (corm), from which crocus-like flowers are produced in the autumn, succeeded by grass-like leaves. It is found throughout the warm parts of Europe, and is highly poisonous, but is of importance in medicine, more especially for gouty affections.

Coleworts and **Kohl-rabi**. (See Cabbage.)

Colic - root, a name in the United States for *Aletris farinosa*, a herb of the Bloodroot family (Hæmadoraceæ), having distichous, lance-shaped, radical leaves, from which rises a simple flower-stem 1 to 3 feet high, terminating in a spike of white bell-shaped flowers. It is one of the most intense bitters known, and is used medicinally in many complaints.

Colocynth (*Citrullus Colocynthis*), a trailing annual of the Gourd family (Cucurbitaceæ). It is common in Syria, Egypt, and countries of the Mediterranean, and has become widely diffused in other parts of the world. The fruit is about the size and colour of an orange, has a smooth hard rind when dry, and contains a soft spongy pulp, which is intensely bitter and poisonous, but is used medicinally as a purgative. It is the wild gourd mentioned in the book of Kings. Its seeds are, however, wholesome. The natives of some parts of North Africa, especially in the Sahara, deprive them of their skin and make a paste of the kernel, which is eaten with dates.

Colt's-foot (*Tussilago Farfara*), a perennial of the Composite family (Compositæ), common on roadsides and waste places ; often seen abundant in railway cuttings. It has large angular - shaped leaves of a greyish colour. It is bitter and astringent, containing a large quantity of mucilage, and is much used in cases of asthma, being smoked like tobacco.

Columbine (*Aquilegia vulgaris*), a perennial herb of the

Buttercup family (Ranunculaceæ), native of Britain. In its wild state the flowers are generally blue, but from its being long a favourite garden plant, many varieties have been raised of different colours, and some with double flowers. It derives its name Columbine from the curved petals being compared to birds, the sepals forming the wings.

Colza Oil. (*See Rape.*)

Comfrey (*Symphytum officinale*), a strong-growing perennial of the Borage family (Boraginaceæ), native of Britain. It has long had its virtues extolled, but, like those of Borage, they are imaginary. The young sprouts are sometimes blanched, and used as asparagus. *S. peregrinum*, generally described as *S. asperrium*, grows taller, and, with its pretty blue pendulous flowers, is a more showy garden plant than the preceding; native of the Caucasus; introduced about the beginning of the present century. Although a rough-leaved plant, it is nevertheless relished by cattle. Some years ago it came into notice as a fodder plant, and trials of it show that, if properly cultivated, an acre will yield as much as 40 to 50 tons of green food. It is found to be rich in gum mucilage and sugar.

Compass or Polar Plant, a name given in the United States to *Silphium laciniatum*, a strong-growing perennial of the Composite family (Compositæ). It grows to a height of 4 to 6 feet, the upper part branched, each branch terminated by a head of yellow florets. Its leaves are of an ovate form, but winged and jagged, of which Dr. Asa Gray says—"On the wide open prairies the leaves are said to present their faces uniformly north and south. From this circumstance it is called the Compass plant." There are several other statements to the same effect, but taking them altogether, there is still a degree of uncertainty regarding the direction of the leaves always pointing north and south. It is also known by the name of Rosin, or Turpentine Plant, consequent on the resinous substance which issues from its stem. It has been noticed by travellers in the prairies that mosses and lichens grow most abundant on the north side of the trees, which circumstance serves as a guide to travellers.

Conferva, the name of a genus forming part of the Linnæan order Algæ, which has by modern botanists been separated into different families—Conferva and its allies forming one termed Confervaceæ, of which about 350 species are recorded. They vary considerably in habit, from microscopic globules, simple hair or thread like, or united forming a web, to broad ribbon-like expansions. They grow on rocks, or in fresh or salt water, or on the surface of moist ground, stones, or other bodies, sometimes like slime, scum, or jelly. A few only, such as *Laver* (which see), are of economic value. Some, by their rapid growth and union, and the extent of surface they occupy with their different colours of red, green, and black, form conspicuous objects in nature. For instance, in Angola, Western tropical Africa, the mountain rocks during the rainy season become striped and ultimately covered with a black mantle, which, when the season becomes dry, peels off like paper, and the rocks assume their natural grey tint, this singular appearance being due to the rapid growth of a Conferva called *Scytonema chorographicum*. In this country several species of Conferva are extremely troublesome in ornamental ponds, lakes, and plant aquariums, covering the surface with a fetid scum, or in flannel-like masses. Sometimes the water becomes of a green colour, and thick. This is caused by a microscopic globular alga that increases rapidly, floating in clusters of such density as to give the water the appearance above stated. It has received the name of *Clathrocystes æruginosa*.

Contrayerva Root, a name given to the rhizome of *Dorstenia contrayerva*, a perennial of the Nettle family (Urticaceæ), native of Brazil. The root is said to possess medical properties, and is imported into this country.

Cooper's Wood (*Pomaderris apetala*), a moderate-sized erect branching tree of the Buckthorn family (Rhamnaceæ), native of New South Wales and Tasmania. Its wood is hard, and is used for staves for casks and for many other purposes.

Copaiva. (See Balsam Copaiva.)

Copai-yè Wood, a name in Guiana for *Vochysia guianensis*,

a tree of the family Vochysiaceæ, native of the forests of Guiana, attaining a height of 50 to 60 feet, and 2 to 2½ feet in diameter. The wood is not very durable, but is used for making staves for sugar hogsheads, boat-oars, etc.

Copal, a hard resinous substance resembling amber, a natural exudation from certain tropical trees. It is also called Gum Anime. 1. Brazilian, *Hymenæa Courbaril* (see Courbaril). 2. Madagascar, *Trachylobium (Hymenæa) verrucosa*. 3. Zanzibar, *Trachylobium (Hymenæa) Hornemannianum*, a large tree of the Bean family (Leguminosæ), native of the country of Zanzibar. It is yielded by trees now growing; but the greatest quantity is found in the sand in localities where no trees now exist, but the remains of insects and even leaves and flowers found embedded in the resin are sufficient evidence to prove that it is the produce of trees that once grew where the resin is now found. It is known in commerce as Anime, or Fossil Copal. Other Copals are found in Western tropical Africa, furnished by *Guibourtia copalifera* and other plants. 4. Indian, the produce of *Vateria indica*, a tree of the family Dipterocarpaceæ, native of Ceylon and Malabar. On wounding the bark a white pellucid fragrant acrid and bitter resin exudes, which in the sun becomes yellow and brittle. In its fluid state it is called Piney Varnish, Pinne being the native name of the tree. 5. New Zealand (see Cowdy Pine).

Copra. (See Cocoa Nut.)

Coquilla Nut, the fruit of *Attalea funifera*, the Piassaba Palm. These fruits, which are produced in bunches, are each about 3 inches in length, covered with a thin skin enclosing a hard nut, which, when polished, is used for bell-pulls and door-handles.

Coquito Nut (*Jubæa spectabilis*), a wing-leaved palm rising to a considerable height, having somewhat the appearance of the Date Palm. It is a native of Chili. The stem contains a sugary sap, to obtain which the tree is felled and the leaves closely cut off, the sap then begins to flow, and it continues to do so for several months till the whole of the stem is exhausted.

The sap is then boiled, and is of the consistency of treacle. In Chili it forms an article of trade, being used as a substitute for sugar under the name of Meil de Palma, or Palm Honey. In warm situations in this country this palm will thrive in the open air.

Coral Tree (*Erythrina corallodendron*), a gouty-stemmed low tree of the Bean family (Leguminosæ), having trifoliate leaves and long spikes of large scarlet papilionaceous flowers. Its seeds are hard and red, and are made into necklaces so as to resemble coral. It is a native of the West Indies.

Coriander (*Coriandrum sativum*), an annual of the Carrot family (Umbelliferæ), native of Southern Europe, and cultivated in this country for the sake of its aromatic fruits, which are used in confectionery, and also for flavouring spirits.

Coriaria, a genus consisting of a few shrubs, representatives of the family Coriariaceæ. 1. *C. myrtifolia*, an erect caespitose shrub, 2 to 3 feet high, having erect opposite myrtle-like leaves. It is a native of the South of Europe, and has received the name *Coriaria*, which means leather, on account of its leaves being used for tanning in the same manner as Sumach, and it is also known by the name of Myrtle-leaved Sumach. Its fruit is highly poisonous, fatal effects having occurred to soldiers in Spain through eating it. 2. *C. nepalensis*, a more spreading species than the preceding, native of Nepal, where its fruit, which is not unwholesome, is said to be eaten. 3. *C. sarmentosa*, native of New Zealand. It is a shrub from 10 to 15 feet high, assuming the character of a small tree, with pendulous branches. It occupies large tracts of land, its presence indicating good soil. The fruit consists of a small black shining pulpy berry, from which a refreshing wine is made by the natives, and it is called the wine-berry shrub by the settlers. The seeds are poisonous, and eating them has proved fatal in several instances, the action being similar to that of strychnine, but not so rapid. It is called Tutu by the natives. 4. *C. thymifolia*, also a native of New Zealand. The juice of its fruit is first of a reddish colour, but soon turns black. It is very lasting, and is called by the settlers the Ink Plant.

Cork Trees.—The soft, spongy, and somewhat elastic bark of several trees is employed for making bottle corks, barrel bungs, and for several other purposes; the most important being the Cork Oak (*Quercus Suber*), a stout middle-sized tree of the Oak family (Cupuliferæ), native of South Europe and North Africa. According to the age of the tree the bark thickens, becoming firm, spongy, and somewhat elastic. It naturally falls off; but for commercial purposes it is removed before this can take place, care being taken not to injure the inner bark, so that it again grows. It is taken off in large pieces, soaked for some time in water, and then submitted to pressure, and formed into sheets of cork, of which the greatest supply to this country comes from Spain, Portugal, France, and some from Italy. The quantity imported in some years has exceeded 2500 tons, a great part of which is used for making bottle corks and bungs; also for soles for shoes, fishermen's floats, life boats and buoys, as well as for Kamptulicon and Linoleum, now much used for floor coverings. In Algeria Cork trees attain a height of 65 feet, and a circumference of 10 to 16 feet. In some parts of Spain they attain an equal height.

Cork Woods (*Ochroma Lagopus*), a tree of the Silk Cotton family (Bombacæ), attaining a height of about 40 feet, common on the coast of the West Indies and many parts of tropical America. The wood is soft, easily compressible, and is used for corks, floats, rafts, etc. Its fruits contain a mass of silky hairs of the same nature as those of the silk cotton trees, and it is used for the same purpose. 2. *Anona palustris* (see Alligator Apple).

Corn, a general term for all kinds of cultivated grasses, yielding farinaceous grains (their fruit), such as wheat, maize, barley, etc. When ground it becomes flour and meal, forming the general bread food of man.

Cornelian Cherry (*Cornus mascula*), a bushy tree or shrub of the Dogwood family (Cornacæ), a native of many parts of Europe and Northern Asia. Its numerous small yellow flowers make it a conspicuous object in the spring. The fruit is oblong,

clear, and shining, of a cornelian colour, and about the size of a small plum. It is not very palatable, but is sometimes used as a substitute for olives. It is also preserved and used in confectionery, and by the Turks for flavouring sherbet. It is considered useful in dysentery, and during the raging of cholera in Constantinople was the only fruit allowed to be sold in the streets. It fruits freely in this country, but is not made any use of.

Costus of the Ancients has of late been ascertained to be the roots of *Aplotaxis auriculata*, a strong-rooted perennial plant of the Composite family (Compositæ), a native of Cashmere, having a flowering stem attaining 5 or 6 feet in height, bearing heads of purple-coloured flowers, like thistles, on the apex of the branches. Its roots are extensively collected, it is stated to the amount of 2,000,000 lbs. a year, forming an important article of trade. It is conveyed to Bombay, and thence shipped to the Persian Gulf, Red Sea, and China. Its chief use is in perfumery, and in China it is burnt in the temples, and used medicinally to excite the appetite. In Cashmere it is not much used except to keep away insects from shawls. It is known by the name of Koot in the bazaars.

In the Bible there are two Hebrew words translated Cassia. The first, "Kiddah" (Exod. xxx. 24), is supposed to be cinnamon obtained from Ceylon. The second, "Ketziath" (Ps. xlv. 8), is supposed to be the Koot or Costus roots as now known.

Cotton, an ancient name for cloths made of the woolly hairs attached to the seeds of *Gossypium herbaceum*, of the Mallow family (Malvaceæ). There are many varieties, which assume different aspects under cultivation. It is generally treated as an annual, but if left alone it becomes a branched shrub. The typical form that supplies the great bulk of the Cotton of commerce is generally known by the name of *Gossypium barbadense*, which under different forms is cultivated in all Cotton-producing countries, which extend about 36° on both sides of the equator. It varies in height according to soil, climate, and mode of cultivation, seldom exceeding 2 or 3 feet, but as a shrub attaining a

height of 15 to 20 feet; its leaves are generally heart-shaped, three or five lobed, and of a soft texture. The flowers are showy, either yellow, pink, or red, succeeded by a three or five celled capsule, which, when ripe, bursts open, presenting a mass of white filaments, and these, after separation from the seed, form the Cotton of commerce, which, next to food-plants, may be considered of the first importance to man; the cloth woven from its fibre being now in general use, it may be said, by all nations of the earth. The first notice of it is found in ancient Indian books, written more than 800 years before the Christian era. It, however, does not appear to have been known in Greece and Western Asia in the time of Herodotus, 500 years B.C. That ancient writer says that the Indians had a plant that bore, instead of fruit, a wool like that of sheep, but finer and better, of which they made clothes. Two hundred years after this Theophrastus speaks of it as growing in Ethiopia. It also appears about that time to have become known in Egypt. Cotton also seems to have been early known in America. On the discovery of that country in 1492 Columbus found it in common use by the natives in Cuba. Cortez and Pizarro found the Cotton plant was utilised in Mexico; and remains of Cotton cloth having been found in the tombs of the Incas in Peru, prove its use to be of ancient date both in America and India. The seeds of Cotton are about the size of small peas. They contain a large quantity of oil, and are crushed and made into cakes for food for cattle.

Cotton Grass (*Eriophorum angustifolium*), a perennial plant of the Sedge family (Cyperaceæ), a native of this country, which, with other species, occupies tracts in marshy ground. When in flower it forms conspicuous masses consequent on its grassy stalks being terminated by a head of flowers, which when perfect becomes a tuft of white cotton-like down, with which cushions are sometimes stuffed.

Cotton Thistle (*Onopordon Acanthium*), a biennial of the Composite family (Compositæ), a magnificent thistle, native of South Europe; it has become indigenous in this country.

Generally found cultivated in gardens, attaining the height of 6 or 8 feet; it has numerous hoary, stiff branches, each terminated by a thistle head of pink flowers; the whole having the appearance of a magnificent candelabrum.

Cotton-wood, a common name for *Populus monilifera*. (See Poplar.)

Coumarin, an odoriferous principle common to the Tonquin Bean (*Dipteryx odorata*), Faham Tea of the Mauritius (*Angræcum fragrans*), Sweet Woodruff (*Asperula odorata*), Melilot (*Melilotus officinalis*), Swiss Melilot (*Melilotus cærulea*), and the sweet-smelling Vernal Grass (*Anthoxanthum odoratum*). This last is a common grass in hay-fields, and it imparts the sweet odour to newly-made hay; and it is probable that hay fever, as it is called, to which many people are liable during the hay harvest, may be attributed to the Coumarin in the atmosphere. Hay fever is also thought to be due to the amount of pollen floating in the air during the flowering season of the corn and grass crops. Besides the above-mentioned sources of Coumarin, it is also found in *Eupatorium aromaticum* and *E. glutinosum*, perennial herbs of the Composite family (Compositæ), natives of North America.

Courbaril Tree (*Hymenæa Courbaril*), a large tree of the Bean family (Leguminosæ), with simple bilobed leaves, native of the West Indies and tropical America, where it attains a large size, the diameter of the true stem being 6 to 9 feet, surrounded by buttresses, measuring round the base above 80 feet in circumference; some trees are supposed to be more than 1000 years old. The pods are thick, flat, 3 to 4 inches in length, and 2 inches broad. They contain a few bean-like seeds embedded in pulp, which becomes mealy as the pod ripens, and is eaten by the natives. It early received the name of the West Indian Locust Tree. It yields a kind of copal gum, which is found in lumps under the roots of the tree. (See Copal.)

Cow Parsley, a name given to the different species of the genus *Chaerophyllum*, perennial herbs of the Carrot family (Umbelliferae). *C. sylvestre* is a native of this country, and known by the name of Wild Chervil. The most important of the

genus is *C. bulbosum*. Its stem is smooth, with swollen joints, and dissected leaves, bearing on its branches umbels of white flowers, like the white carrot. It is a native of Europe, and is cultivated in some parts of Germany for the sake of its tubers, which are about the size of a hen's egg; when well cultivated it is very prolific, and two acres will yield about ten tons of roots. They are very nutritious, and contain a large quantity of starch. They may be dug up in June, but are not perfect till September, when they have the flavour of vanilla, and form a wholesome food. Another tuberous-rooted edible species is *C. Prescottii*, a native of Siberia, described as having roots as large as a parsnip. Tuberous roots are also characteristic of the genus *Peucedanum*, allied to the above, represented in this country by *P. officinale*, known as Sulphurwort; but the most worthy of notice are *P. triternatum* and *P. nudicaule*, natives of Sierra Nevada and California. They have tuberous roots about the size of nuts, and have a mild sweet taste, and contain much starch and other nutritious matter. They are largely collected by the Indians, and form a large portion of their food.

Cow Parsnip (*Heracleum sphondylium*).—The common Cow Parsnip is a perennial of the Carrot family (Umbelliferae), native of this country. Its stem attains a height of 4 to 5 feet, bearing broad bipinnate leaves, and large umbels of whitish flowers. It possesses no special property; toy pop-guns are made of its hollow stems. *H. giganteum* is remarkable for its great size, attaining the height of 10 to 12 feet, and bearing large umbels of yellow flowers; it is a native of Siberia. It is the tallest plant of the Umbelliferae.

Cow Tree (*Brosimum Galactodendron*), a tree of the Bread-fruit family (Artocarpaceae). This is the Palo de Vaca or Cow Tree, first described by Humboldt. It is a native of Venezuela, where it attains a height of from 80 to 100 feet, and forms large forests; it has oblong pointed leaves of a rusty colour on the under side, strongly veined and firm. On incisions being made in the trunk, a copious flow of milky sap is obtained, which is extensively used by the natives as a

substitute for milk, and has been daily used by Europeans without producing any ill effects. With this knowledge, and impressed with Humboldt's comparing the trees to cows, an Englishman was led to entertain the project of introducing and naturalising them in this country, thus conferring a great boon on the people. Accordingly, in 1830, he arrived in England with a great number of young trees—it was said 1000. To his philanthropic views he added that of profit, and expected that his trees would be eagerly purchased for a guinea each; but in this he was disappointed, for few were bought, tree-cultivators being aware that a forest tree from Venezuela could only be grown as a curiosity in a hothouse, which circumstance had not been thought of by the speculator; and further, it was afterwards found that his trees were not true Cow trees, but a species of *Achras*, as proved by one of the trees grown at Kew.

2. *Tabernaemontana utilis*, the Cow tree of British Guiana, where it is called Hya-hya, a large much-branched tree of the Dogbane family (Apocynaceæ), with simple elliptical leaves. On wounding the stem a copious flow of milky sap issues, of the taste of sweet milk, but rather sticky, consequent on containing some caoutchouc.

3. *Collophora*, a tree of the Dogbane family (Apocynaceæ), native of the countries of Rio Negro. It attains a height of 30 to 35 feet, with a diameter of 12 inches. Its leaves are simple, and, with the branches, grow in verticels of threes; in the flowering season it is profusely clad with corymbs of red flowers, which are conspicuous in the forest. On the bark being wounded, the milk flows abundantly, and is of the consistency of cow's milk, of the purest white, and sweet to the taste. The Indian mode of taking this milk is to apply the mouth directly to the wound, and thus receive the milk as it flows. Dr. Spruce, the celebrated South American traveller, says—"I have many times partaken of it without experiencing any ill effects." It is however, slightly viscid, which shows it to contain a little caoutchouc, and on that account it is considered useful as a medicine in dysentery. The natives call the trees Cuma.

4. The Cow tree of Para is a lofty tree, attaining a height of 100 feet, belonging to the Star Apple family (Sapotaceæ), and is supposed to be a species of *Mimusops* (*M. elata*). On incisions being made in the bark, a milky juice flows most copiously; it is about the consistence of thick cream, from which, but for a slight peculiar flavour, it can scarcely be distinguished. By exposure to the air it thickens, and forms an adhesive glue, something like gutta-percha. The fruit is about the size of an apple, very juicy, and is sold in the markets of Para. The timber is very hard, and used for many purposes. In Para the tree is known by the name of Massaranduba.

Cowbane (*Cicuta virosa*), a perennial aquatic of the Carrot family (Umbelliferae), producing an erect, hollow, much-branched, striated stem, 3 to 4 feet high, furnished with dissected leaves. It is like the hemlock, highly poisonous, and fatal accidents have occurred from eating its roots, and to cattle from eating its leaves. It is also called Water Hemlock. It is a native of this country, but, fortunately, not common. *Ænanthe Phellandrium* is also called Water Hemlock; it belongs to the same family, and is similar in habit to the preceding, and is equally poisonous; indeed, it may be said that all aquatic Umbelliferae are poisonous.

Cowberry. (See Bilberry.)

Cow-itch, or **Cowhage** (*Mucuna pruriens*), a strong trifoliolate-leaved climbing plant of the Bean family (Leguminosæ), having somewhat the habit of the scarlet runner; it and allied species are natives of tropical countries. The name Cow-itch is a corruption of the Indian name Cowhage. The pod is densely covered with small, very light, and short hairs, which are removed by the slightest touch, settling on and penetrating the skin, producing an intolerable itching well known to many travellers, and to those who incautiously handle the pods, or even open packages in which they are contained; when mixed with honey or syrup they are used as a vermifuge.

Cowrie, Kawrie, or Cowdie Pine (*Dammara australis*). (See Dammar.)

Cowslip (*Primula veris*), a perennial herb of the Primrose family (Primulaceæ), native of this country ; it is known in some parts of the country by the name of Pea Gulls. It grows in moist places. By the ancient herbalists it was held in high repute for the cure of many disorders, but it has now lost its reputation. In some parts of the country wine is made from the flowers, known as Cowslip Wine, which is very sparkling and pleasant.

Cowslip, American (*Dodecatheon Meadia*), a perennial herb of the Primrose family (Primulaceæ), native of the warm parts of North America ; introduced to this country about the middle of the last century, and has been always held in esteem as an ornamental and interesting plant in botanic gardens, and in private collections by amateurs. The scientific name is of fanciful derivation, meaning "twelve divinities," and in the Western States it is called Shooting Star.

Cowslip, Cape, a name given to the different species of *Lachenalia*. There are a considerable number of species native of the Cape of Good Hope ; they are bulbous-rooted plants of the Liliaceæ, producing radical lanceolate leaves often spotted ; the flowers are pendulous, produced on a stalk about 6 inches high, and are generally of a yellow colour. The species form ornamental plants in our greenhouses.

Crab's Eyes. (See Bead Trees.)

Crab Oil, a name in Guiana for the oil expressed from the seeds of *Carapa guianensis*, a tree of the Bead-tree family (Meliaceæ), native of Guiana ; it attains a height of 60 to 80 feet, having large, shining, winged leaves of firm texture. Its fruit consists of a globose hard shell about 4 inches in diameter, containing a number of large, brown, thick, wedge-shaped seeds, closely packed, which yield an oil used by the Indians for anointing their hair, and small quantities are imported into this country. Its wood takes a fine polish, and is used for many purposes in Demerara. Under the name of *C. guineensis*, a similar tree has been described, native of Western tropical Africa. It differs but little from the preceding except in having

larger fruit, sometimes 6 inches in diameter. It also produces an oil. This species is now sunk under the former.

Crab Tree. (*See Apple.*)

Cranberry (*Vaccinium Oxyoccus* and *V. macrocarpum*), slender, trailing-stemmed, small-leaved shrubs, belonging to the Cranberry family (Vacciniaceæ). They are natives of this country and North America, growing in boggy heaths. The fruits are berries about the size of currants, which are collected for preserving and for making tarts. *V. macrocarpum* has the largest fruit, and is imported from North America, where it is extensively cultivated, especially near Berlin, Wisconsin, where about one-fourth of 750 acres of marsh is under cultivation. It is flooded during winter; in the spring the water is drained off, and in October picking commences. Sometimes there are as many as 3000 pickers employed. The ground is so marshy that a wooden railway is laid from the centre of the operations to convey the berries in trucks to the warehouse, where they are laid on the upper floor, and on the lower are large fanning mills to which the berries are let down in hoppers, and are thus cleaned from leaves and other impurities. 35,000 bushels are sometimes collected from this spot in one season, the greatest quantity of which is sent to the Chicago market. This quantity is far surpassed in New Jersey, where in favourable seasons 125,000 bushels are collected, valued at £60,000.

Crassula, a genus of Crassulaceæ, consisting of a great number of species, natives of South Africa, many of which are cultivated for their showy red flowers, especially *C. falcata* and *C. coccinea*. The latter has of late years come into bad repute for its narcotic qualities, symptoms of poisoning having in some instances followed the mere smelling of the flowers, the effect in some cases continuing several days, even requiring medical aid. As it is a favourite window plant, it is advisable that it should not be kept in close rooms.

Cream-fruit, a name in Sierra Leone for a fruit supposed to be produced by *Roupellia grata*, a handsome creeper of the Dogbane family (Apocynaceæ). It has pretty white flowers

tinted with pink; its fruit is a follicle full of silky hairs, and therefore does not agree with the description of the true Cream-fruit, which is said to be a lofty tree growing abundantly on the island of Plantains; the fruit when wounded yields a quantity of fine white juice resembling the best milk, with which the negroes allay their thirst.

Cream of Tartar Tree (*Adansonia Gregorii*). (See Baobab.)

Creasote Shrub, the common name for *Larrea mexicana*, a shrub of the Bean Caper family (Zygophyllaceæ). Very abundant in some parts of Mexico, forming a dense scrub, particularly on the Colorado desert. It grows on the most sterile sandy soil. Its strong creasote odour renders it disagreeable to travellers, as also to animals. It is unfit for firewood, as it can scarcely be made to burn, its only apparent use being to fix the desert sands. The resinous exudation that is found upon the branches has, however, recently been proposed as a substitute for lac dye.

Cress, Garden (*Lepidium sativum*), a weedy annual of the Cabbage family (Cruciferae), supposed to be a native of Persia. It was in use in this country more than 300 years ago; it is in general cultivation along with mustard, both being used in their young state as salad.

Cress, Indian, the garden name for *Tropæolum minus* and *T. majus*, annual plants of the Indian Cress family (Tropæolaceæ). They are well-known showy garden annuals, varying in the colours of their flowers; the fruits are pickled and known by the name of Nasturtium Pickles. They possess the flavour of the common cress, and are used as a substitute for capers. Their flowers and leaves are used as salad.

Cress, Water (*Nasturtium officinale*), a floating perennial of the Cabbage family (Cruciferae), common in rivers and brooks in this country, and cultivated in the neighbourhood of all large cities, being in general use as a salad cress. In London the cry of the Water-cress seller is one of ancient date. The plant is considered a good antiscorbutic. It has become naturalised in New Zealand, and grows so rapidly and strong as to choke up rivers.

Crocus. (*See* Saffron.)

Crocus, Autumn. (*See* *Colechicum*.)

Crosswood, a name in San Domingo for *Jacquinea ruscifolia*, a small tree of the Myrsine family (Myrsinaceæ), native not only of San Domingo, but also of tropical America. It derives its name Crosswood from the circumstance of its branches being produced in whorls of four, thus forming a cross. It is held in high repute by the natives as a stauncher of blood and internal hæmorrhage, and they tell a long story how this property was discovered. Sir Robert Schomburgk, however, found its vaunted properties to be wholly imaginary.

Croton Oil, the name of an oil obtained from *Croton tiglium*, a shrub of the Spurgewort family (Euphorbiaceæ), native of India. The oil is a powerful purgative, and only used in small doses. It is made into pills, for if taken by itself it produces a burning heat in the throat; one drop is sufficient for a pill; when taken in large quantities it acts as a poison, causing symptoms like cholera, and frequently death.

Crown Imperial (*Fritillaria imperialis*), a bulb of the Lily family (Liliaceæ), native of the South of Europe and Western Asia. It was introduced to this country about the end of the sixteenth century. Besides the brown-flowered varieties there is one with pure yellow flowers. Their bulbs contain starch, and in France their cultivation has been attempted as a substitute for the potato. *F. Meleagris* is a rare British plant, being found only in one or two localities, one of which is the meadows between Kew and Mortlake. It has solitary nodding flowers beautifully chequered with reddish brown.

Cubebs. (*See* Pepper.)

Cuckoo Buds. (*See* Buttercups.)

Cucumber (*Cucumis sativus*), a tendril climber or trailing annual of the Gourd family (Cucurbitaceæ). According to Bible history, the Cucumber was cultivated in Egypt in the time of Moses, and is still cultivated there, and forms a great part of the food of the people. It is also cultivated in most warm countries, and even in England produces a crop in the open air;

but to obtain early and fine fruit it is grown in heated frames. There are many varieties, some producing fruits of great length. Ghirkins are simply Cucumbers gathered in a young state, and form a well-known pickle. The principal ingredient in the West India Pickles is the fruit of *C. anguria*.

Cucumber Tree. (*See* Magnolia.)

Cudbear (*Lecanora tartarea*), a crustaceous lichen growing abundantly on stones, rocks, walls, and on dry ground; early employed in Scotland and Wales for dyeing woollen cloth. Its name Cudbear is a corruption of the Christian name of Dr. Cuthbert Gordon, who was the first person to bring it into extensive use, and who took out a patent for a new process of preparing it. In the North of Scotland it is scraped off the rocks and sent to Glasgow market, but the quantity collected in the whole of Britain is small compared with the demand; a considerable quantity comes from other countries, Sweden alone supplying 150 tons annually. This dye, however, like that of Archil, is now being superseded by the aniline dyes made from coal-tar.

Another crustaceous lichen used as a dye is *Parmelia parietina*, its colour varying from yellow to red. It grows abundantly on brick and stone walls.

Cujumary Bean. (*See* Nutmeg.)

Culcit (*Balanium culcita*), a fern of the tribe Dicksoniæ; the fronds are decompound, 3 to 4 feet high, produced from a decumbent progressing caudex, which is densely covered with long, brown, silky hairs, which are used by the people of Madeira and Azores (where it is a native) for stuffing cushions and the like.

Cuma. (*See* Cow Tree.)

Cummin (*Cuminum Cyminum*), an annual of the Carrot family (Umbelliferæ), with fennel-like leaves, and seeds like the celery, having an aromatic but somewhat bitter flavour. It appears to have been early cultivated in Palestine, as it is mentioned in Isaiah as well as in the New Testament.

Cundurango, a name in New Grenada for *Gonolobus con-*

durango, a milky, twining climber of the Swallowwort family (Asclepiadaceæ), famed in New Grenada and other parts of tropical America as a cure for cancer.

Curare or Ourare Poison. (See Urari.)

Curatella, a genus of small trees of the family Dilleniaceæ. *C. americana* is a native of the Savannahs of Guiana. It has rough leaves, used by the Indians as a substitute for sand-paper to polish their blow-pipes, war-clubs, etc.; hence it has received the name Curatahie, from which the generic name *Curatella* is derived.

Currant, Black (*Ribes nigrum*), **Red** (*R. rubrum*), and **White** a variety of the latter. Deciduous bushy shrubs of the Gooseberry family (Grossulariaceæ), natives of many parts of Europe, North and West Asia, and North America, and found wild in some parts of this country. By cultivation their fruits have been greatly improved. They are used in the fresh, ripe state as a cooling dessert fruit, as well as for tarts, wine, etc., besides which many tons are made into preserves, especially of the red and black sorts. Currant is also the commercial name of the small variety of the grape-vine which comes from the island of Corinth, the word currant being a corruption of Corinth. (See Vine.)

Cuscus, Khus-Khus, or Koosa, the Indian name of *Andropogon muricatus*, a perennial tufted grass of great economical use in India, its fibrous roots being woven into a kind of fabric, used as blinds to keep flies and mosquitoes, as well as hot, dry winds, out of rooms and verandahs. Occasionally sprinkled with water, they emit a pleasant perfume.

Cusso, the Abyssinian name for *Hagenia abyssinica*, a tree of the Rose family (Rosaceæ). The Abyssinian traveller Bruce describes it as one of the most beautiful and handsome trees of that country. Its properties are powerfully anthelmintic, and it is very efficacious in expelling worms, not only tape-worms, but the kind called Ascarides, to which the Abyssinians are very subject. It is a moderate-sized tree, with winged leaves.

Custard Apple (*Anona reticulata*), a tree of the Anona family (Anonaceæ), native of the West Indies and tropical America, where it is cultivated for its fruit. Its habit of growth is like that of a standard peach-tree, but taller. In shape its fruit is like a bullock's heart, a name by which it is sometimes known. Its pulp is yellowish white, containing many seeds of an agreeable flavour, but somewhat gritty if gathered too soon.

Cycas, a genus of the Cycad family (Cycadaceæ), of which there are several species. The best known is *Cycas revoluta*, said to be a native of China and Japan, but common in many countries, even found in New Guinea. It was introduced in 1737, and its palm-like appearance has caused it to become a favourite ornamental plant, its thick cylindrical stem often attaining the height, according to age, of 3 to 4 feet. It is now common in the West Indies and many parts of America. The pith of the stem contains a kind of sago, which has led to its being called the Sago Palm. Another species (*C. circinalis*) is abundant in Malabar and many other parts of India, as well as in the Moluccas, Malay, and other islands. It is a taller and more slender-stemmed species than the preceding, attaining the height of 20 feet, and sometimes forked. In New Ireland the natives make use of the nutty seeds for food.

Cyperus, the name of an extensive genus, consisting of several hundred species, the type of the Sedge family (Cyperaceæ). They are annual or perennial grass-like plants, growing in tufts, having harsh sharp-edged sheathing leaves, and generally three-sided flower-stalks, varying from a few inches to 5 or 6 feet in height; flowers consist of imbricated glumes or branched spikelets. They are common throughout the tropical and sub-tropical regions of both hemispheres. Two are natives of this country, *C. fuscus* and *C. longus*. Both are rare; the latter is sweet-scented, and known by the name of English Galingale.

The roots of several species produce fleshy tubers, which form articles of food in different countries, being especially

cultivated in India, China, and some parts of tropical America. *C. esculentus* is cultivated in France, Italy, and the South of Europe. The taste of the roots when roasted is compared to potatoes. It is by some used as a substitute for coffee. Several species are extensively cultivated for their flower-stalks, of which ropes and mats are made. The Indian floor-matting is made of the culms of *C. Pangorei*, and in China *C. tegetiformis* and *C. (Lepironia) macronata* are extensively cultivated. They are aquatic, and grow in the water like rice, attaining a height of 5 to 6 feet; and in a manufactory near Canton forty looms are said to be constantly employed in making mats, which are of varied designs. They are generally of a pale yellow, but some are variously coloured. They are largely imported from Canton to Hong-Kong, United States, this, and other countries. (See Papyrus.)

Cypress, Deciduous (*Taxodium distichum*), a tree of the Coniferae family, of considerable size, native of the Southern United States, having horizontal branches and small flat leaves, set in two rows (distichous), and are deciduous. It is perfectly hardy in this country, attaining a height of 50 or more feet. Its heart-wood is of a beautiful pink-red colour, but soft. It is remarkable for the hollow excrescences produced by the roots at a considerable distance from the tree, which rise to a height of 2 or 3 feet from the ground. They are used for many domestic purposes in its native country.

Cypress, Evergreen (*Cupressus sempervirens*), native of Western Asia. It has long been cultivated in this country and throughout the southern parts of Europe. It is much planted about Mohammedan burial-grounds, as may be seen in the neighbourhood of Constantinople. It attains the height of from 40 to 60 feet, but in this country seldom reaches 20 feet, and maintains a compact pyramidal form.

Cypress, Funeral (*Cupressus funebris*), a remarkable tree, native of China, attaining a height of 60 feet, having pendulous branches like the weeping willow. It has been introduced into this country, but is not found to be quite hardy.

Cypress, Portuguese. (*See* Cedar.)

Daffodil (*Narcissus, pseudo-narcissus*), a bulbous herb of the Amaryllis family (Amaryllidaceæ), native of this country, and very generally cultivated in gardens for its early flowers. It contains an acrid principle, which produces injurious effects when the flowers are kept in rooms, *Narcissus* being derived from the word *Narke*, which means stupor.

Dahlia, a genus of Compositæ, consisting of thick tuberous-rooted, strong-growing herbs, attaining a height of 3 to 5 feet, producing solitary terminal flowers on the branches. There are two kinds—one with female rays, *D. superflua*, the other neuter, *D. frustranea*. They are, however, considered to represent but one species. The Dahlia is a native of Mexico, introduced into England about the beginning of the present century. At first it was considered that the tuberous roots could be used as a vegetable, but cultivation did not improve them, and they continued hard and unpalatable. It was not till 1820 that they again came into notice by double flowers having been obtained, and for a number of years the Dahlia has held a high place as a florist's flower, and prizes have been awarded for them at all horticultural exhibitions. A species named *D. imperialis* has of recent years been imported from Mexico. It is remarkable for its height, its stem being from 12 to 14 feet high, branching towards the apex, each branch terminated by a drooping head of florets 6 to 7 inches across. It is known as the Tree Dahlia.

Dammar, the name of a resin produced by species of *Dammara*, a genus of the Fir family (Coniferæ). About six species are known, widely distributed throughout the Malayan and other Asiatic islands of the southern tropic, one extending to New Zealand. They are tall trees, having nearly horizontal branches producing whorls which are articulate at the trunk, and on falling away leave a clear round scar or mark; leaves entire, smooth, varying from rusciform to oblong elliptical, of a leathery texture, with longitudinal veins, destitute of a midrib.

1. *D. orientalis*, native of Amboyna, Ternate, and other

of the Molucca Islands, where it grows to a great height on the mountains. Its wood is said to be like cedar, light, and wholly unfit for exposure to the weather. It gives a resin called Dammar, which, as it flows from the tree, is thin and viscous, but in a few days it hardens, and is used for many purposes.

2. *D. australis*, native of New Zealand, known as the Kawri or Cowdie Pine ; of this species trees are known to have attained the height of 200 feet, and as the stems of old trees are perfectly clean and free of branches for a considerable height they are greatly valued for ship's spars.

The timber is in so much demand by the settlers that in time it is feared it will become exterminated if means are not taken for the preservation of the forests, and making new plantations. A resin like that produced by the first-named species issues from the trees, and forms hard lumps like copal. It is also found in large masses where no Kawri trees now grow, and large quantities are imported into this country, as also to the United States. It is used as a varnish and for dressing woven fabrics.

3. *D. vitiensis*, or by some called *macrophylla*, native of the Fiji Islands, called by the natives Dakna. In one of the islands (Korovono) some trees attain a height of from 80 to 100 feet, and at 4 feet above the base, 16 feet in circumference, and free of branches to the height of 60 feet. It is stated that specimens have measured 18 to 27 feet in circumference. The wood is white, and is used for masts, booms, and spars, and all those purposes for which deal is usually employed in Europe. Great havoc has already been made in some of the islands by the axe and saw of the white man. This species also yields a resin, lumps of which have been found of fifty pounds weight under old stumps, and it is also found abundantly in districts where trees now grow ; it is called *Mabradra* by the natives, but has not yet been turned to any profitable account. Quite recently a resin has been introduced to the London market under the name of Fijian Copal. It is probable that this is the produce of *D. vitiensis*.

4. *D. obtusa*, native of New Hebrides ;
5. *D. Moorii*, native of New Caledonia ;
6. *D. robusta*, native of Queensland,—are similar to the preceding.

Dammar, Indian, is the produce of different species of the family Dipterocarpaceæ, one of which is *Hopea micrantha*, a tall tree native of Borneo. (See Wood Oil.) And in Malabar *Canarium strictum*, a tree of the Myrrh family (Amyridaceæ), produces a resin known as Black Dammar.

Damson. (See Plum.)

Danchi, or **Dhunchi**, in India the name of a fibre obtained from *Sesbania aculeata*. A slender prickly-stemmed annual of the Bean family (Leguminosæ), having winged leaves formed of numerous leaflets, which in some degree partake of the nature of the sensitive plant. In India it is cultivated for its fibre, which, although rough, is strong, and lasts a long time under water. It is also cultivated in some parts of tropical America.

Dandelion (*Taraxacum officinale*), a perennial plant of the Composite family (Compositæ), having spreading lanceolate sinuous leaves rising from a tap root in the form of a rosette, producing single yellow flowers on a hollow stalk. A native of and a common weed in this country, also widely spread throughout the northern hemisphere. It is held in repute for its medical properties, its roots being a powerful diuretic, and by some they are used with coffee instead of chicory. Its leaves are bitter and tonic, and used as a salad like endive. It takes its name from *Dent-de-lion*, or lion's tooth, from the leaves being supposed to resemble the teeth of a lion.

Danewort, also called Dwarf Elder (*Sambucus Ebulus*), a strong-growing perennial herb of the Woodbine family (Caprifoliaceæ), native of this country, growing in copses and margins of woods, but not common. It grows to a height of 2 to 2½ feet ; its flowers are purple, in cymes. It has leaves and black berries like the common elder, but nauseous and fetid. There is a superstition attached to it, that it sprang originally from the blood of Danes slain in battle.

Darnel (*Lolium temulentum*), an annual grass, native of this country and Europe generally, and countries of the East. It is a troublesome weed in corn-fields, its ears being similar to rye. It is one of the few poisonous grasses, and if ground with true corn is highly deleterious to those who eat the bread made of it. It is considered to be the tares among the wheat, mentioned in the New Testament.

Date Palm (*Phoenix dactylifera*), a wing-leaved palm, attaining a height of 50 or more feet. It is a native of North Africa, Egypt, Syria, and Arabia, and has become naturalised in Spain and other parts of Southern Europe. It may truly be called the "Palm of the Desert," occupying the fertile spots called Oases. Its fruits are produced in bunches of twenty, thirty, or more. They contain a great quantity of sugar, and are highly nutritious, forming an important article of food to millions of people. The hard kernels of the fruit are ground, and serve as food for camels and other domestic animals. Date stones have recently been brought to notice as a substitute for coffee, and are now roasted and sold in large quantities under the name of Date Coffee. Dates form an important article of trade to this country, chiefly from the North African ports.

Date Plum, American, also called Persimmon (*Diospyros virginiana*), a tree belonging to the Ebony family (Ebenaceæ), native of the United States. It attains a height of 50 or 60 feet, and has a rough, hard bark, and unisexual or bisexual flowers. The fruit is nearly round, about an inch in diameter, and of a yellowish orange colour; it is very austere, but after being frosted is edible. These fruits are pounded and made into cakes, from which a kind of beer is prepared, and a spirit is obtained by fermentation and distillation. The tree is rare in this country. One, 40 feet high and 100 years old, may be seen at Kew, which in some seasons produces fruit.

Date Plum, Chinese (*Diospyros Kaki*), a tree, native of China and Japan, where, as well as in India, it is cultivated for the sake of its fruit, which is about the size of a small apple; it is said to be delicious, and is made into a preserve. It has

been introduced into Egypt, whence it is called Lotus Tree. It has fruited at Kew.

Date Plum, European (*Diospyros Lotus*), a low-growing tree, native of the South of Europe. It produces a small fruit, which is supposed by some writers to be one of the fruits eaten by the people called Lotophagi. (*See Lotus.*)

Datura, the botanical name of a genus of annual or soft-wooded, single-stemmed shrubs or small trees of the Nightshade family (*Solanaceæ*). The best known in gardens is *D. Stramonium*, the Thorn Apple, a rude-growing, strong-smelling annual, 2 feet high, with stiff spiny branches and large ovate leaves, the margins of which are irregularly toothed. The flowers are white, large, spreading, trumpet-like, and the fruit a capsule about the size of a walnut, containing numerous seeds. The plant is a native of India, and was first cultivated in gardens in this country, but it has now become wild on margins of cultivated ground and rubbish heaps. It is highly narcotic and poisonous, deaths having occurred from eating its leaves in mistake for spinach; the leaves when smoked as tobacco are considered beneficial in asthma. It is supposed that the seeds of *D. Stramonium* have the effect of producing delirium, and are said to have been used by the priests of Apollo at Delphi to produce their ravings, which were called prophecies. They are also used by the Thugs or poisoners in India to carry on their nefarious practices, and in this country for drugging. *D. fastuosa*, *D. Metel*, and others, all now widely spread throughout warm countries, possess the same properties as stramonium.

2. *D. arborea*, better known as *D. suaveolens*, is an old inhabitant of the gardens of this country, native of Peru, having been introduced about 150 years ago. A thick, soft-wooded, single-stemmed shrub or small tree, not exceeding 20 feet in height. It has large, soft, elliptical leaves, and in cultivation it produces a profusion of large, white, fragrant, bell-shaped flowers, and is a highly ornamental conservatory plant. This and the following species have by modern botanists been

separated from *Datura* as a distinct genus under the name of *Brugmansia*, the principal distinctive character being their arborescent habit and smooth fruits.

3. *D. sanguinea* is, like the preceding, a soft-wooded shrub or small tree, with large, orange-coloured, tubular flowers, which are highly ornamental in the conservatories of this country. It is a native of Peru, Darien, and other parts of Central America. Its seeds, like those of stramonium, are highly narcotic. Much superstition is attached to it by the Indians, who prepare a drink from the seeds called Tonga, the use of which, they believe, brings them into communication with the spirits of their forefathers. Shortly after drinking stupor comes on, and the eyes become fixed on the ground; in about a quarter of an hour the mouth is convulsively closed, and the eyes begin to roll, and the whole body becomes frightfully convulsed. This is succeeded by several hours' sleep; on awakening the sufferer relates his visions to his friends.

In Darien the Indians give the drink to their children, and it produces a state of excitement in which they are supposed to possess the power of discovering gold; where they fall the spot is dug, and as gold dust is more or less found in every part of the soil, sufficient is generally obtained to confirm their belief in the method of detecting gold.

Dawa, a name of a tree in Fiji. (*See* Litchi.)

Deal, the name given to woods of the Pine tribe. (*See* Fir Trees.)

Deodar. (*See* Cedar.)

Devil's Tree. (*See* Dita Bark.)

Dewberry. (*See* Bramble.)

Dhal, an Indian name for the seeds of *Cajanus indicus*. (*See* Pigeon Pea.)

Dhourra, the Egyptian and Indian name for Millet.

Dika, or **Udika Bread**, a name in the Gaboon country of Western tropical Africa for a preparation made from the seeds of *Irvingia Barteri*, a tree of the Quassia family (Simarubaceæ); the fruits are pulpy, the size of a peach or large plum; as they fall

from the tree they are placed in a large heap, where they remain two or three days, until they begin to decompose; the seeds are then separated and cracked, the kernels are taken out, put into a large mortar, and crushed into a homogeneous mass, after which they are put in the sun and allowed to melt, forming a greasy substance, which is made into cakes by finally pressing it into bluntly conical moulds. This substance keeps a long time without becoming rancid, and the natives use it for food. The solid oil or fat which is expressed from the kernels also has the property of retaining its sweetness for a long time.

Dikamali Resin, also called **Cambi Resin**, names given in India to a gum-resin obtained from *Gardenia lucida*, a large, stiff-branched shrub of the Cinchona family (Cinchonaceæ), native of many parts of India. It is cultivated in the gardens of the Deccan, and is found wild in the island of Elephanta, near Bombay. The resin exudes in transparent drops or tears from the extremities of the young shoots, and especially from the flower-buds. It is formed into small cakes or lumps, and becomes very hard, and of a blackish-green colour, and when pounded has an aromatic smell like myrrh, which it resembles in its medicinal properties. It is also applied externally for ulcers as a preventive against mortification.

Dill (*Anethum graveolens*), a weed-like annual of the Umbel family (Umbelliferæ), cultivated for its aromatic fruits (generally known as seeds in commerce), which are similar to caraway. Dill-water is obtained by distillation of the fruits, and is used in medicine. The plant is a native of Southern Europe and Western Asia, and appears to have been early cultivated in Palestine, it being the Anise of the New Testament, but not the Anise plant as now known (which see).

Dillenia, the name of a genus and type of the family Dilleniaceæ. It consists of large trees inhabiting dense forests in India, Burmah, and the Malayan Peninsula and Islands. They have large alternate leaves, generally of an oval or oblong shape, and strongly marked with parallel veins running straight from the midrib to the margin, ending in sharp teeth. Flowers

yellow, large, and showy. *Dillenia indica* and *D. pentagyna* are common in India, attaining a height of 30 to 40 feet. The leaves of *D. pentagyna* are very large, averaging in old trees from 1 to 2 feet long, and in young trees even longer. *D. scabrella* is a smaller tree, and has very rough leaves, which are used instead of sand-paper. The fruit of *D. indica* is about 3 inches in diameter, consisting of the calyx, which is enlarged and fleshy; it is edible, but acid; the natives in India use it in curries or for making jelly, and the acid juice sweetened with sugar forms a cooling drink. The wood is hard, and used for making gun-stocks and the like.

Diss, an Algerian name for the fibrous stems of a reed-like grass (*Ampelodesmos tenax*), used for paper-making.

Dita Bark, a name in India, especially about Bombay, for the bark of *Alstonia scholaris*, a tree of the Dogbane family, (Apocynaceæ). It is widely diffused throughout India and the Malayan Islands; it is a stiff-branched tree, attaining a height of 50 to 80 feet, with a furrowed trunk; it has oblong leaves, 3 to 6 inches long and 2 to 4 wide, produced in fours round the branches. The bark is intensely bitter, and used by the natives in bowel complaints, and its milky juice as a kind of gutta-percha. It has recently been introduced into this country for use in medicine. It is also called Devil's Tree.

Divi-Divi (*Cæsalpinia coriaria*), a tree 20 to 30 feet high, of the Bean family (Leguminosæ), with compound-winged leaves, native of the West Indies, Mexico, and many parts of South America. It has tough curved pods of a reddish-brown colour, largely imported into this country for dyeing and tanning, under the above name of Divi-Divi.

Dock, a common name for different species of *Rumex*, a genus of the Rhubarb family (Polygonaceæ), of which there are many species widely distributed over the northern hemisphere, fifteen being natives of Britain. They are weedy plants, and pests in cultivated ground. Two species are cultivated in gardens. (See Sorrel.)

Dodder, a common name for the species of *Cuscuta*, a genus

of the Dodder family (Cuscutaceæ), of which there are several species; they are slender, thread-like, twining, leafless parasites, involving and destroying the whole plant on which they grow. Two species are natives of this country, viz. *C. Epithymum*, which grows abundantly on Ericas, and *C. europea* upon thistles and nettles or other soft plants within its reach, and bringing them to final destruction. Of late years two other species have accidentally been introduced, viz. Flax Dodder (*C. Trifolii*) and Clover Dodder (*C. Epilinum*). The first destroys whole fields of flax, and the latter preys to a great extent on clover, both plants being the cause of great losses to the agriculturist. In India some species are very large and powerful, involving trees of considerable size in their grasp.

Dogwood (*Cornus sanguinea*), a shrub or small tree of the Cornel family (Cornaceæ), common in hedges and waste places in this country and throughout Europe and Northern Africa; well known by its pretty, smooth red branches and black berries. It received the names of Dogwood and Hound's Tree from the circumstance of a decoction of its bark having been used for washing mangy dogs. The wood is hard, and is sometimes used for butchers' skewers, toothpicks, etc. The fruit is black, about the size of a currant, very bitter, and yields an oil used in France for burning in lamps and for soapmaking. The plant is also called Cornel Tree. The name Dogwood is also applied to the stems of *Rhamnus Frangula*, which are largely used for making charcoal for the manufacture of the best rifle gunpowder. (See Buckthorn.)

Dogwood, Tasmanian (*Bedfordia salicina*), a small tree of the Composite family (Compositæ), seldom exceeding 15 feet in height. Its wood is hard, of a beautiful grain, and used for cabinet-work.

Donax (*Arundo Donax*), a strong-growing, cane-like grass, resembling the bamboo in habit, but only averaging 8 to 10 feet in height. It is a native of the South of Europe and Palestine. Its stems are used for many domestic purposes, such as walking-sticks, measuring-rods, and musical pipes; pan-pipes are made of them.

Doon, a Cingalese name for *Doona zeylanica*, a large tree of the Dipterocarpaceæ family, native of Ceylon; the timber is much esteemed for building purposes. A resin exudes from the trunk resembling dammar, which is mixed with paddy-husks, and used for burning in lamps.

Doorda, or **Doorwa**, the name in India for *Cynodon dactylon*, a creeping-rooted, perennial, low grass, its flowers being digitate in spikes; it is a native of this country, but rare. In many countries it occupies large areas; Dr. Spruce describes it as abundant on the eastern slopes of the Andes. By its creeping roots it spreads rapidly, and may be called a conqueror, as other plants give way to it. In India it abounds in the Sunderbunds. When its leaves dry up in the sun, its roots form a never-failing supply for feeding horses in Calcutta, and a cooling drink is said to be made from them.

Doum Palm. (See Gingerbread Palm.)

Dragon's Blood (*Calamus draco*), a wing-leaved, slender-stemmed palm, similar in habit to that which furnishes the chair canes. It is a native of Sumatra and other Malayan islands. The fruits, which grow in bunches, are about the size of a cherry, and are covered with imbricating scales of a red colour coated with a resinous substance, which is collected by placing the fruits in a bag and shaking them; the friction loosens the resin, which is then formed into sticks or cakes, and constitutes the best Dragon's Blood of commerce. It is used for varnishing and staining wood, etc. Other species of *Calamus* help to furnish the Dragon's Blood of commerce.

Dragon's Blood Tree (*Dracæna draco*), a tree of the Lily family (Liliaceæ), native of the West Coast of Africa, Canaries, and adjacent islands. Young plants of this have a similar appearance to *Yucca gloriosa*, but it grows into a large tree; after having attained a certain height it produces branches. The famous dragon tree of Orotava, in Teneriffe, believed to be the oldest vegetable organism in the world, is stated to have been 70 feet high and 48 feet in circumference; its stem was hollow, and had a staircase in it as high as the point where its

branches commenced. It was entirely destroyed in 1867, having previously suffered much from storms. A portion of one of its branches is preserved in the Kew Museum. *Dracæna draco* was introduced into the Royal Gardens many years ago, and in 1864 one specimen had attained the height of 30 feet, bearing a crown of sword-shaped leaves on a cylindrical stem six inches in diameter. A red resinous substance called Dragon's Blood is a secretion of matter that collects at the base of the leaves, which, after the leaves fall, hardens, and is scraped off, and is similar in its nature to the preceding.

Dragon's Plant, Common, *Dracunculus vulgare* (*Arum Dracunculus*, Lin.), a tuberous-rooted herb of the Arum family (Aroideæ), having a snake-like, mottled stem and pedate leaves, and attaining a height of about 3 feet. It produces a large, dark-coloured spathe, which emits an offensive odour, and while the pollen is discharging it gives off sufficient heat to be felt on putting the hand into the spathe. It is a native of the South of Europe, and is common in botanic gardens.

Dry-rot is the name given to decayed timber caused by the mycelium of several species of fungi which under certain conditions of heat and moisture attack woodwork in ships, houses, and wooden erections in general, growing in the dark, and rapidly increasing in bulk, first covering the surface with a series of thread-like filaments, which are continually being added to, and ultimately forming a thick, leathery, white substance, such as is often found behind the partitions of walls and under floors. It penetrates the wood in all directions, reducing it to powdery rottenness, in many cases doing irreparable mischief before it is observed. The perfect plant is only occasionally seen issuing from a crevice or some opening in the woodwork. The following are the names of two of the principal Dry-rot fungi:—*Polyporus hybridus*, which affects oak timber in ships, and *P. destructor*, as also *Thelephora puteana*, chiefly on pine-wood, in dwelling-houses and other buildings. *Merulius lacrymans* differs from the preceding in the thick mycelium being moist, often dripping like tears, hence its name *lacrymans*. *Dædalea*

quercina grows on decaying stumps of trees, often attaining a large size.

Dulse (*Rhodomenia palmata*), a sea plant of the family Ceramiaceæ, growing abundantly on the rocky shores of this country, and also in Ireland, being found at the lowest ebb of the tide. It has divided fronds about 6 inches in length, of a red colour, and is eaten in a raw state as a salad, and considered extremely beneficial in scrofulous complaints, its efficacy being no doubt due to the iodine it contains.

Dumbcane (*Dieffenbachia seguina*), a plant of the Arum family (Aroideæ), native of the West Indies, having a fleshy cane-like stem, $1\frac{1}{2}$ inches in diameter, and from 4 to 6 feet high. Its leaves are oblong elliptical. It is highly acrid and poisonous. If a portion be chewed in the mouth it causes the tongue to swell and loss of speech for some time; hence the name Dumbcane.

Durian (*Durio zibethinus*), a tree of the family Sterculiaceæ, native of the Indian and Malayan Archipelagoes, a large forest tree attaining a height of 70 or 80 feet, in general appearance resembling the elm. The leaves are simple, oblong elliptical, acuminate. The flowers are of a pale yellow colour, produced on the main stem and larger branches. The fruit is a five-valved capsule of globose or oval form, about 10 inches long by 7 wide. The rind is thick and hard, covered with strong prickles. It is five-celled, each cell containing four or five seeds, which are as large as pigeons' eggs, and are embedded in a cream-coloured pulp, which is extremely luscious and enticing to eat, having the taste of a rich custard, flavoured with almonds; but the flavour varies, sometimes being like cream cheese, sherry wine, onion sauce, and other flavours. It is the general opinion that there is no other fruit either of tropical or temperate climes that combines in itself such a delicious flavour with such an abominably offensive odour, an odour that may be compared to putrid animal matter, or rotten onions. This makes the fruit very repugnant to Europeans; but when once this repugnance is overcome, the

Durian is highly esteemed. The tree is extensively cultivated, and during its season the fruit forms a great part of the food of the natives. The seeds are roasted, and the unripe fruit is boiled as a vegetable.

Dutch Bulbs, a name given to bulbous-rooted plants, extensively grown around Haarlem, in Holland, and forming an important export trade to this, America, and other countries. They consist chiefly of Hyacinth, Narcissus, Crocus, Tulips, Anemones, and Ranunculus. Besides the quantities imported by nurserymen and seedsmen, large quantities are sold in different auction-rooms in London.

Dutch Rushes, the name given to different species of *Equisetum*, well known in this country as Horsetails. In Holland they grow on the banks of canals, and on the sea ramparts, which are often bound together by their strong and matted roots. Their stems, under the name of Dutch Rushes, form an article of trade, being employed for polishing the smooth surfaces of wood, bone, and even metal; the property which gives it its value for this purpose is due to the presence of a very large quantity of silex (sand), which is deposited in the form of little crystals, rendering the surface rough like a rasp or file. The best for this purpose is *Equisetum hyemale*.

Dwal. (*See* Nightshade.)

Dyer's Weed. (*See* Woad).

Eagle-wood, a name in India for the wood of *Aquilaria Agallocha*, a tall tree of the Wood Aloe family (Aquilariaceæ), having alternate lance-shaped leaves. It is a native of India, Java, and other islands. The wood is fragrant, and contains a resinous oil, which is burnt as a perfume in temples.

Earth Chestnut, also called Pignut (*Bunium bulbocastanum* and *Bunium flexuosa*), perennial multifid-leaved herbs of the Carrot family (Umbelliferæ), natives of this country, growing on banks and waste places. Their roots bear nut-like tubers, which are sweetish to the taste, and are dug up and eaten by children. They are also called Kipper and Pignuts, and in

Scotland Lousy-ar-nuts, so called on the supposition that eating them breeds lice.

Earth Pea, or Ground Nut (*Arachis hypogæa*). It is an annual clover-like plant belonging to the family Leguminosæ, attaining a height of 2 feet. It is supposed to have been originally a native of America, but is now cultivated in most warm countries. It is curious for its seed-pod being perfected under ground. It is about 2 inches long, and contains two or three pea-like seeds of an earthy flavour, extensively used as food by the negroes. They contain an oil, and are imported in large quantities into this country, and the oil expressed by crushing is very sweet, and is largely used for adulterating olive oil. An allied plant, *Voandzeia subterranea*, is a decumbent annual, also extensively cultivated as an article of food in Western and South Africa, and has become naturalised in the warm parts of America.

Eau-de-Cologne. (See Rosemary.)

Ebony.—This is furnished by several species of *Diospyros*, a genus of the Ebony family (Ebenaceæ)—Ceylon Ebony by *D. Ebenum*; Indian Ebony by *D. Ebenaster* and *D. melanoxylon*; and Mauritius Ebony by *D. reticulata*. They are large but slow-growing trees, with firm, dark-coloured, simple leaves. By age the interior of the wood becomes hard and black, and is the Ebony of commerce; the exterior remaining white and spongy. Ebony is mentioned in the Bible as an article of merchandise, obtained probably from Ceylon.

Ebony, Jamaica or West Indian (*Brya Ebenus*), a slender tree of the Bean family (Leguminosæ), attaining a height of 30 feet or more, having slender spiny branches and winged leaves. It is a native of Jamaica, and has hard wood of a greenish-brown colour, which takes a good polish. It is sometimes called Green Ebony, and is also known by the name of Cocus Wood. In an article in the journal of the Linnæan Society in 1857 it is stated that a turner by the name of Ford was employed by Government to turn some thousands of round rulers of this wood, and that it made his hand become green,

which could not be removed by the application of different washes.

Ebony, St. Helena (*Melthania melanoxydon*), a small tree of the Cocoa Nut family (Byttneriaceæ), one of the special plants found only in St. Helena, where it is indigenous; the trees having, however, been cut down in large numbers for firewood, and the young plants destroyed by goats which were introduced into the island, the plant has become nearly, if not entirely, exterminated. Dr. Roxburgh, who botanised in St. Helena in 1816, says the few trees remaining are about 10 to 15 feet high, their trunks crooked and about as thick as a man's thigh, the branches very numerous and spreading. In old trunks the wood is hard and black like Ebony. A supposed second species is *M. erythroxydon*, which has red wood, but which is not now found in the island.

Eddoes. (See Lotus and Taro.)

Egg Plant (*Solanum Melongena*), an annual herb of the Nightshade family (Solanaceæ), native of South America, and now spread over the tropics. It was introduced into Britain in 1597. It is a tender annual plant, cultivated for curiosity. Its fruit resembles an egg. There are several varieties, the fruits of which vary in colour from white to red, yellow or dull purple, and in shape more or less round or oblong. It is much cultivated in France, as also a sort called Bringall or Brinjal, of which French cooks make great use for culinary purposes.

Elaterium. (See Squinting Cucumber.)

Elder Tree (*Sambucus nigra*).—This well-known tree belongs to the Woodbine family (Caprifoliaceæ). It seldom exceeds 20 or 30 feet in height. Its various parts are applied to many domestic uses. Its wood is white and hard, and used for making skewers, shoemakers' pegs, and for articles of turnery. Elder Wine is made from its black berries, which are also used for colouring port wines. A well-known eye-wash is made from its flowers, which is also used as a lotion for the skin and for fomentations. Herbalists make an ointment of the leaves, and a tea is made from the flowers, to which many virtues are

ascribed. The strong smell of the leaves has been supposed to keep insects from plants. It is a native of England and Europe generally, and in this country is to be seen growing in neglected and waste places and about ruins. In Scotland it is called the Boutry Tree, and is considered poisonous, and a great deal of superstition is attached to it.

Elecampane (*Inula Helenium*), a strong-growing perennial herb of the Composite family (Compositæ), with large entire leaves, and flower-stem 3 or 4 feet high, bearing large yellow-rayed flowers. It is a native of this country, and is cultivated for its roots. The whole plant has an aromatic bitter flavour, especially the root, which abounds in a mucilaginous principle resembling starch. It has been famed as a medicinal plant of great virtue, but is now out of repute, and is only used for flavouring sweets.

Elemi, the name of a fragrant gum-resin obtained from different trees, chiefly from species of *Amyris* and *Icica* belonging to the Myrrh family (Amarydaceæ). They are natives chiefly of tropical America and India. *A. elemifera*, of Mexico and Vera Cruz, yields Mexican Elemi. *Canarium commune*, a tall tree of the same family, native of Amboyna, Luzon, the Moluccas, and Penang, produces Manilla Elemi.

Elephant Apple (*Feronia elephantum*), a large wing-leaved tree of the Orange family (Aurantiaceæ), common throughout India, Ceylon, and Burmah. The fruit is about the size of a large apple, and has a hard woody rind, containing numerous seeds embedded in pulp, which tastes like that of the Bengal quince, and has similar medicinal properties. It is also known by the name of Wood Apple.

Elephant's-foot Plant. (See Tortoise Plant.)

Elm (*Ulmus campestris*).—The common elm is a well-known tree of the family Ulmaceæ, valued for its timber, which is used for many purposes, particularly for works underground or in water. The Wych Elm (*Ulmus montana*) also affords good timber, but does not grow to so large a size. The Elm is extensively grown in this country, lives to a great age, and is some-

times of large dimensions. In consequence of *U. campestris* not producing perfect seeds in this country, and there being no evidence of its being found in a wild state, it is therefore supposed that it is not a native; while *U. montana* seeds freely, and is abundantly wild in Scotland.

Elm, American (*Ulmus americana*), native of North America, abundant in Nova Scotia and Canada, extending to the Southern United States. It is a tree resembling the English Elm, but has larger leaves, and attains a greater height, even that of 100 feet. The wood is used for the same purposes as the preceding, but is not so hard, and is less durable. Its inner bark is very tough, and is used for weaving into seats for common chairs and the like.

Emden Groats. (*See* Oats.)

Endive (*Cichorium Endivia*), an annual of the Composite family (Compositæ), said to be a native of the East Indies or China. It was introduced about 300 years ago; it is in general cultivation as a winter salad plant. There are several varieties, the principal being the broad-leaved and curled endive.

Ensete, a name in Abyssinia for *Musa Ensete*, a noble plant of the Banana family (Musaceæ). It was originally discovered by Bruce, the distinguished traveller and collector, more than a century ago. His account of this plant, like many other parts of his history of that country, was doubted until 1853, when seeds and a description of it were sent to the Royal Gardens, Kew, by W. Plowden, Esq., then British consul in that country. Plants raised from these seeds grew rapidly, soon forming a stem 8 feet high, with a girth (at 6 inches above the soil) of 7 feet 6 inches, its leaves being 17 feet long by 3 feet 4 inches wide. This plant thus produces the largest entire leaf of any vegetable organism at present known. The flower-stalk rises from the centre of the plant as in the banana, and is as thick as a man's arm, forming a considerable article of food to the natives. The fruit is not succulent, but small and dry, being quite useless as food.

Ergot (*Oidium abortifaciens*), a microscopic mildew common

on grasses, attacking one or more of the young grains in the ear, which it affects in such a manner as to cause it to swell into a substance very distinct from that of the grain, being solid and of a fatty nature, generally in the form of a spur, sometimes an inch or more in length. This is common to rye, whence the name Spurred Rye. In its earliest stage the surface of the spur is covered with mildew of a chalky-white colour, which moisture readily removes, hence the spurs (Ergot of shops) are of a black colour, the mildew filaments being the *Oidium* or true plant. The spur is very poisonous; and in Germany and other parts of Europe where rye bread is extensively used, it causes those who eat it to be afflicted with incurable gangrenous diseases. This led to the interference of Government to test the purity of rye before being ground. Ergot being common to grasses on which sheep and cattle browse, it is supposed to be the cause of diseases to them, and of their early dropping their lambs and calves. Although it is of such a poisonous nature, it is a most valuable medicine in the hands of the accoucheur.

Ervalenta. (*See* Lentils.)

Eryngo Root. (*See* Sea Holly.)

Esparto Grass (*Macrochloa tenacissima*), a strong-growing perennial, cæspitose, rush-like grass, occupying extensive sandy tracts of the Mediterranean coast, especially in Spain, Algeria, Morocco, and the Sahara. It is used for making hats, mats, baskets, and other domestic articles, and of late years has become extensively used for paper-making. In 1873, 100,000 tons were imported for this purpose, and now double that quantity is said to be imported. The grass, when stored, is liable to ferment, and by spontaneous combustion to break out into fire. Various fires have originated in this manner.

Eucalyptus, the botanical name of an extensive genus of trees of the Myrtle family (*Myrtaceæ*). They are natives chiefly of Australia and Tasmania, where they form large forests. There are about 140 species described, but they vary so extremely in different kinds of leaves being produced on various parts of the same tree, thus presenting distinct specific characters, and

in the varying nature of their bark, that the determination of species is very difficult. In Tasmania they are described as rising to a height of from 200 to 400 feet, with a diameter of from 6 to 8 feet. Their naked gaunt stems, of 100 to 150 feet clear of branches, present the appearance of a forest of natural columns. These, sometimes blackened by the fires of the natives and with the shaggy loose bark hanging about them, afford a grand but dismal spectacle. Trees of equal, if not larger, size are found in Victoria, a fallen one measuring 480 feet in length, while one still larger measured 80 feet in circumference.

According to the nature of their bark they receive various names, such as Stringy Bark (*E. obliqua*), Iron Bark (*E. sideroxylon*), Blue Gum (*E. globulus*), Peppermint Tree (*E. amygdalina*). Some also receive the name of Native Mahogany, which, with the kind called Gray Iron Bark, etc., are sometimes imported into this country. The wood of some is very hard and durable, and so heavy as even to sink in water. Many yield a kind of Kino or gum, such as *E. resinifera* and *E. amygdalina*. Essential oils, used in perfumery, are also produced in large quantities from their leaves. *E. mannifera*, and others, yield sweet secretions analogous to manna. It is also stated that *E. Gunnii* furnishes a great quantity of liquid that ferments and forms a kind of beer. They produce abundance of seeds, which vegetate freely, and have, through the agency of man, become naturalised in many countries. As they are of robust growth, a "struggle for life" in the natural vegetation is the consequence. Many years ago large quantities were raised at Kew, and experiments tried with them in the open air. They grew vigorously, and several species withstood ordinary winters, but the severe cold of January 1838 destroyed them, after their having attained a height of 15 feet. Since then a species named *E. polyanthemus* has stood for the last thirty years in an exposed part of the gardens. The young shoots are occasionally injured, but it is otherwise perfectly hardy, and might become a useful timber tree in the southern parts of England.

During the last twenty years many species of *Eucalyptus*,

especially the Blue Gum (*E. globulus*) and *E. amygdalina*, have come into high repute as sanitary trees, and have exercised on regions of the warm temperate zone a greater influence, scenic, industrial, and hygienic, than any other single species of arboreal vegetation ever reared anywhere, even Pines or Oaks and other classes of leading trees not excepted. Thus the features of wide, formerly treeless, landscapes have already afforded, in many places, timber and fuel for rapidly-increasing settlements, and rendered also many a miasmatic locality permanently habitable, such as the Pontine Marshes near Rome and other parts of Italy; also in Algeria and in some parts of India they begin to assume the character of natural forests.

Euphorbia, the name of an extensive genus, the type of the Spurgewort family (Euphorbiaceæ). The species are very variable in habit. They are represented in this country by about a dozen annual and perennial herbs, the most common being *E. helioscopia*, an annual well known as Little Goody. In the Canaries, West, South, and East Africa, and India, numbers of the species are of succulent habit, varying much in form, some consisting of simple globose or branching stems not more than a foot in height, while others become hard and woody, stiff-branched small trees, generally leafless, or nearly so. *E. grandidens*, native of the Cape of Good Hope, attains a height of 20 to 30 feet; its branches are nearly horizontal, in the form of a chandelier. The flowers in many of the species are small and inconspicuous, while in others they are showy, as in *E. splendens*, a spiny species, native of Madagascar. *E. punicea*, native of the West Indies, and the splendid *E. pulcherrima*, native of Mexico, better known as *Poinsettia pulcherrima*. Most of the succulent species agree in habit and general appearance with analogous forms of cacti, but are readily distinguished on being punctured or cut by a copious flow of milky juice, which is more or less acrid and poisonous in the different species, especially on coming in contact with wounds or with the eyes. Fish are readily destroyed by placing pieces of *E. piscatoria*, *E. Tirucalli*, or *E. pendula*, in waters where fish abound. As a

practical instance, it may be mentioned that some years ago the Victoria Lily Aquarium at Kew became overcrowded with gold-fish, and, as it was found they ate the leaves of the Victoria, it became necessary to get rid of them. To effect this a few pieces of *E. Tirucalli* were thrown into the tank in the evening. The next morning the surface of the water was found covered with dead gold-fish, not one being left alive. *E. resinifera* yields the gum called Gum Euphorbium. The chief supply comes from Morocco and Barbary. It is obtained by making incisions in the stem and branches; the milky juice then flows, and, after becoming hard and dry, is scraped off. Great caution is, however, necessary in collecting it, as it is very excoriating, and the small particles rising in the air affect the eyes, and cause incessant sneezing. It was originally used as a powerful medicine in certain complaints, but on account of its violent action is now little used. Its chief use at the present time is in the preparation of an anticorrosive paint for ships' bottoms. The milk of most of the species contains a small amount of caoutchouc, which in *E. Cattimandoo*, a succulent arborescent species, native of the Madras Presidency, furnishes a sufficient quantity of caoutchouc to make it worth the trouble of collecting.

Evening Primrose (*Enothera biennis*), a biennial of the family Onagraceæ, native of Virginia, and now become naturalised in many parts of Europe. It is cultivated as an ornamental garden-plant, and in Germany it is grown for the sake of its young shoots, which are used as a vegetable in the early spring.

Faham. (See Tea, Bourbon.)

Fairy Rings.—In autumn several species of fungi spring up suddenly on grassy lawns, growing in rings of greater or lesser diameter. They were formerly supposed to be produced by some supernatural agency, and the spirits called fairies were believed to have held their midnight revels within the circles. Their formation is, however, very simple, natural, and easily accounted for. The centre of the circle begins with a single

fungus, which performs its functions and dies. The next season another patch appears outside the spot occupied by the original forming a small ring, and this repeated from year to year, the ring increasing in size. The decay of the previous fungi rendering the soil unfit for the reproduction of the same species, the mycelium or spores find fresh soil on the external margin of the ring, and again germinate. One species of fairy-ring fungus, *Marasmius oreades*, is edible, and is called the Champignon.

Fan Palms, a name applied to all palms having fan-shaped or flabelliform leaves, represented in Southern Europe and North Africa by *Chamærops humilis*, occupying extensive sandy plains and rocky places, generally growing in a crowded cæspitose manner without stem, the length of the leaves not exceeding 3 or 4 feet, but in cultivation, by the suppression of the suckers, it forms a stem which attains a height of 20 to 30 feet. A tough fibre is obtained from the leaves, which is used for many purposes, such as for making ropes, brushes, etc.

Feather Grass (*Stipa pennata*), a perennial wiry grass, native of Britain, but rare. The flowers are produced in loose panicles, which, when dried and coloured, form ornaments for rooms. It is common on the steppes of Tartary. In the region of the Volga mares' milk forms a great part of the daily food of the Tartars, and it is supposed their freeness from consumption is due to its use; the peculiar quality of the milk is attributed to the mares feeding on the feather-grass.

Fennel (*Foeniculum vulgare*), a perennial of the Carrot family (Umbelliferæ). Its stems attain a height of 5 to 6 feet, and are furnished with finely-cut leaves. It is a native of Europe, and has become naturalised in some parts of this country. It is cultivated in gardens for its leaves, which are strongly aromatic, and are used in fish sauces. Fennel oil is extracted from its fruits.

Fennel Flower (*Nigella sativa*), an annual of the Buttercup family (Ranunculaceæ). It grows a foot or more in height, and has finely-cut leaves, with white or light-blue open flowers, and a five-celled capsule containing numerous black seeds.

It grows wild in South Europe, Egypt, and Syria, in which countries it is also cultivated for its seeds, which are strongly aromatic. In India they are used for putting with woollen goods to keep away insects. In Palestine and Egypt they are greatly used for flavouring curries, and spread over cakes like comfits. The Egyptian ladies use them to produce stoutness, considered by them to be a point of beauty. The seeds are the Fitches of Scripture. This species and *N. damascena* are cultivated in gardens, and known by the vulgar name of Devil-in-a-bush.

Fennel, Giant (*Ferula communis*), a tall perennial of the Carrot family (Umbelliferae), native of Southern Europe, the stem often attaining a height of 8 to 10 feet, and a diameter of 2 to 3 inches, having finely-divided compound leaves and umbels of yellow flowers. The stems are full of white pith, which when dry ignites like tinder, and is used in Sicily and other parts as such. When once ignited it burns very slowly, and without injury to the tube of the stem. It is used for preserving and carrying fire from place to place. This custom is of great antiquity, and serves to explain the passage in Hesiod, where, speaking of the fire Prometheus stole from heaven, he says "he brought it in a Ferula." The stems are very light, and Bacchus, the God of Wine, recommended that his votaries should carry them, so that if they quarrelled from the effects of too much wine, they could strike one another without inflicting injury. *F. dulce* is considered to be a variety of the preceding, but differs from it in the radical leaf-stalk being swollen, thick, and becoming united, thus forming a kind of tuber, which is used extensively in France and Italy as a culinary vegetable under the name of Finocchio or Finicho. It is not much cultivated in this country, but is sometimes to be seen in the vegetable markets in London.

Fenugreek (*Trigonella Fenum-græcum*), an annual similar in habit to Lucerne, and belonging to the same family (Leguminosae), native of Southern Europe, Egypt, and Western Asia. Its seeds have a strong odour, and were used in medicine by the

ancient Egyptian, Greek, and Roman doctors. They are now only employed for giving false importance to horse-medicine and damaged hay. They contain the principle called Coumarin, which is also found in the vernal grass, *Anthoxanthum odoratum*, which imparts the pleasant smell to hay.

Ferns, a common name for a family of plants, botanically termed Filices, of which about 2500 species are named and described; they are found in greater or less numbers in all regions favourable to plant life, and vary in size and form from that of a blade of grass to lofty trees 50 or more feet in height, terminated by a crown of finely-cut leaves, termed fronds, often 15 or more feet in length. They are reproduced by seeds termed spores, which are generated on the under side of the fronds, or in spikes formed of contracted fronds. Having therefore no true flowers, they belong to the grand division termed *Cryptogams* or flowerless plants. It might be expected that, in such an extensive and widely-distributed family of plants, many of them would possess useful properties, but such is not the case, few being useful either as food, medicine, or in the arts. One of the most important food products furnished by ferns is the underground stem or rhizome of *Pteris aquilina*, which, under different forms, is common and abundant in most countries (*see* Brake). In New Zealand and other islands of the South Sea, where tree ferns abound, the centre of the stems of *Alsophila excelsa* and *Cyathea medullaris* consists of a mucilaginous pith, used as food, as also the thick mealy foot-stalks of *Angiopteris evecta*, a fern very abundant throughout the tropics. The most important in medicine is the common Male Fern *Lastrea Filix-mas* (which *see*). During the last fifty years ferns have come into high favour not only as ornamental plants, but also as competition plants at horticultural exhibitions, for which prizes are awarded, which have been the means of raising the value of certain kinds, varying from £1 to £50. The introduction and cultivation of ferns has consequently become an important branch of commerce.

In 1823 the collection in the Royal Botanic Garden, Kew,

numbered only 40 exotic species; in a catalogue published in 1864 the number had increased to 600 species, and in a work entitled *Ferns British and Foreign* (1866), 1084 species of ferns and their allies are recorded. Of that number only about 40 (true ferns) are natives of Britain, of which it may be well said, no class of plants of so small a number has been more written upon, and announcements of new works are frequently to be seen.

Fescue Grass, a name applied to the various species of *Festuca*, an extensive genus of the Grass family, widely spread over the earth. Nine species are natives of Britain—*F. pratense* and *F. duriuscula* being fodder grasses, and *F. ovina*, a short, wiry grass on which sheep feed.

Feverfew (*Pyrethrum Parthenium*), an erect bushy plant of the Composite family (Compositæ), a foot or more in height, with much-divided leaves, and white-rayed flowers like the camomile. It is wild in many parts of this country, often seen growing on old walls. It is bitter and tonic, and from early times has been valued by herbalists as a remedy for fever. A double variety of it is grown as an ornamental garden plant.

Fig (*Ficus Carica*), a tree of the Mulberry family (Moraceæ). It is generally understood that the Fig is a native of Western Asia, and was in early times introduced to the islands and countries on both sides of the Mediterranean and Southern Europe, where it has become indigenous, and occasionally attains the height of a tree. It is cultivated in this country generally in the form of a shrub, having long branches requiring support. The so-called fruit of the Fig is not a true fruit, but a fleshy receptacle of a conical form, attached by the narrow end, the broad end or apex having a small opening like a pore, the true flowers and seeds lining the interior, which may be seen on opening a Fig. The fertilisation of the Fig is peculiar, and is termed caprification; it is believed to be promoted by a winged insect, called Cynips, entering the young fruit by the pore at the apex, and by the movements of the insect the pollen is loosened from the anthers, and thus comes in contact with the stigmas, as effected by insects in the flowers of

other plants. There are many fine varieties of the Fig cultivated. The dried Figs that come to this country form a large article of trade with Turkey, the islands of the Mediterranean, and ports of the African coast.

The genus *Ficus* consists of about 100 species, varying in size from small-leaved adhering creepers like ivy to lofty trees, some being of gigantic size (see Banyan Tree and Peepul Tree). The following is an account of one growing on a mountain in the island of Trinidad :—"We carved our names on a gigantic *Ficus*, with the date of our visit. This tree is a noble specimen; four of us standing on its spurs 6 feet from the ground could only just span it." Many are climbers, some may be termed epiphytal, having roots as thick as a man's arm. These clasp and destroy trees on which they grow; specimens may be seen in the museum at Kew. The whole of the species abound in a milky juice, which contains more or less caoutchouc. In Assam this substance is extensively produced by *Ficus elastica*. (See Caoutchouc and Banyan Tree.)

Fig Marigold, the common name for the species of the genus *Mesembryanthemum*, belonging to the family Ficoideæ. It consists of about 300 species, some of which are much-branched, fleshy plants, 1 to 3 feet in height; others are stemless, consisting of opposite succulent leaves only, which are either triangular or in the form of tongues, or with their edges variously toothed, resembling the jaws of animals, hence the names Tiger-chap (*M. tigrinum*), Dog-chap (*M. caninum*), Cat-chap (*M. felinum*), Mouse-chap (*M. murinum*). There is also a group of species, consisting of simple bodies of various forms, about an inch in height, such as the Small Dumpling (*M. minimum*), Greater Dumpling (*M. obcordellum*), Cloth Button (*M. fibuliforme*), Nut-like (*M. nuciforme*). The flowers are white, yellow, or pink, and, with the exception of *M. nocturnum*, they open only during midday sunshine, which has led to their being called *Mesembryanthemum*, which means "flowering at midday." Their fruit is a fleshy capsule, in the form of a small fig, and having been eaten by Hottentots, they are called

Hottentot Figs. With a few exceptions they are all natives of South Africa; they are represented in Australia by *M. æquilaterale*, the fruit of which is eaten by the natives.

Filbert. (*See* Hazel.)

Filmy Ferns, a name applied to the tribe of ferns termed Hymenophylleæ, of which there are nearly 200 species described, found in all regions conducive to fern life. As a tribe they differ from other ferns by the extremely delicate and, in general, thin pellucid texture of the fronds, which, in the different species, vary much in form and size, from half an inch to a foot and a half in length, entire, or variously lobed or multifid. Three species are native of this country, but are rare, and are becoming more so in consequence of the interest taken in them by amateurs, who grow them in Wardian cases, in which they form interesting objects. In 1864 the Kew collection consisted of sixty exotic species of *Hymenophyllum* and *Trichomanes*.

Finocchio, or **Finicho**. (*See* Fennel, Giant.)

Fiorin Grass (*Agrostis stolonifera*), a wide-spreading, creeping, bent grass, which, with *A. alba*, was highly extolled by the late Dr. Richardson as a winter fodder grass; he brought the subject so prominently before the Agricultural Society and the public that he was caricatured mowing grass in winter with his coat off and the snow on the ground.

Fir Trees are typically represented by the well-known Norway Spruce, Silver, and Balm of Gilead Firs, which, with the recently-discovered allied species, form a part of the important family Coniferae. They were originally included under the genus *Pinus* of Linnæus, but modern botanists have considered it proper to separate them as a distinct genus under the name of *Abies*, which by some authorities also includes the Larch and Cedar of Lebanon (which see). The species of *Abies* are readily distinguished from those of *Pinus* by having short linear leaves separately attached, closely set on the branches, imbricate in two or more distinct rows, while those of *Pinus* are long, narrow, and needle-like, produced in fascicles of two, three, or five.

During the present century many new species of *Abies* have

been discovered, natives of Mexico, California, North-West America, also the Himalayas, and a few in the Caucasus and Europe. Many of them are lofty trees, and are not only valued for their timber, but also for the production of tar, turpentine, and balsamic resins. The number of species now known amounts to about 20, of which we need but notice a few of the most important.

Abies excelsa, Norway Spruce Fir, native of northern and alpine regions of Central Europe, in some localities forming extensive forests, and said to attain a height of 100 to 150 feet. Its timber is highly valued, and imported to this country from ports in the Baltic under the name of White Deal, and employed for all purposes of house-building, interior fittings of houses, etc. When grown close together the trees run up erect and slender, and to a considerable height; such furnish good scaffold poles; the wood takes a high polish, and is used by cabinet and musical instrument makers, etc. This Spruce, like other allied species, yields an odoriferous resin, which is obtained by making incisions in its bark, and on being boiled in water and strained becomes Burgundy Pitch. The tree is extensively grown in this country, both for its timber and for ornamental purposes.

A. Douglasii, Douglas Spruce Fir, a large tree, native of British Columbia, North-West America; introduced to this country in 1826 by its discoverer, David Douglas (Botanical Collector for the Royal Horticultural Society), after whom it is named. It attains a height of 150 to 200 feet. Its wood is white, soft, and brittle. In 1861 a specimen of a trunk, forming a flag-staff 159 feet long, was presented to the Royal Gardens, Kew, and set up on one of the Temple-mounds raised by George III. more than a hundred years ago. The tree has been extensively planted in this country, but it is a question whether it will be useful otherwise than as an ornamental tree.

A. canadensis, called the Hemlock Spruce Fir, native of Canada, and extending southward through the United States on mountains. In Canada it attains a height of 60 to 80 feet.

It is an elegant tree from the symmetrical disposition of its branches, which droop gracefully at their extremities, and it has light and tufted foliage. Its wood is not of much repute, but its bark is highly valued for tanning. Its young branches make excellent Spruce beer. It was introduced in 1736, but considered only an ornamental tree. Forty years ago there were two fine examples in the Royal Pleasure Gardens, Kew.

A. balsamea, Balm of Gilead Fir, native of Canada, Nova Scotia, and other parts of North America. It is a low-growing tree compared with many of its allies, seldom exceeding a height of 20 to 40 feet. Its cones and bark yield a turpentine called Canada Balsam, which is used in the arts, and valued for preserving microscopic objects.

A. Picea, Silver Fir, native of Central Europe and temperate Northern Asia. It attains a height of 100 and even (it is said) 200 feet. It takes its name from the leaves being silvery-white underneath, and when standing singly it is a beautiful tree. There are many good trees growing in different parts of this country. Its timber is not much valued, but said to be durable under water. A resin is obtained from it, which when purified is known as Strasburg Turpentine.

In California the genus *Abies* is represented by about a dozen species, all large trees, of which *A. nobilis*, *A. bracteata*, and *A. Menziesii* are conspicuous. *A. religiosa*, native of Mexico, is a fine tree, but not hardy in this country.

In India the genus is represented by *A. Smithiana*, *A. Webbiana*, and its variety *A. Pindrow*; the first is hardy, the two latter are not.

P. Nordmanniana, native of the Crimea, *P. Cephalonica* and *P. pinsapo*, natives of Southern Europe, are fine trees, hardy in this country.

Fir, Scotch. (*See* Pine.)

Fitches of Scripture. (*See* Fennel Flower.)

Flag. (*See* Fleur-de-Luce.)

Flame Trees.—Different trees in different countries having brilliant scarlet flowers, in most cases flowering before the

expansion of the leaves; when seen in the distance have the appearance of being on fire. Examples are—1. *Rhododendron arboreum*, native of Nepal, a tree of considerable size, which when in flower imparts a blaze of colour to the forest. 2. *Sterculia acerifolia*, a tree of the Cola Nut family (Sterculiaceæ), native of New South Wales, attaining a height of 60 to 100 feet, and a circumference of from 6 to 8 feet, having smooth, large, lobed leaves and racemes of showy red flowers. 3. *Nuytsia ligustrina* and *N. floribunda*, the first native of New South Wales, and the latter South - West Australia. They belong to the Mistletoe family (Loranthaceæ), and are exceptions to the general rule of that family in not being parasites on other trees; but they grow in the ground, forming bushy trees 20 or 30 feet high. 4. In the region of the Dead Sea, the pretty flowering tree *Acacia Farnesiana*, belonging to the Leguminosæ, is densely covered with a species of parasitical *Loranthus*, which when in flower gives the trees the appearance of being on fire.

Flax (*Linum usitatissimum*), a wiry, erect-stemmed annual of the Flax family (Linaceæ). It appears to have been cultivated from remotest antiquity, manufactured Flax fibre having been found in the prehistoric lake-cities of Switzerland; and the mummy cloth of Egyptian tombs was made of Flax fibre. Flax is now generally cultivated in many countries of the north temperate zone, growing as well in Northern Russia as in the valley of the Nile and plains of India. It is cultivated in this country, but more extensively in Ireland; the quantity, however, falls short of the demand. It is largely imported from Russia, and various other parts of Europe; also from Egypt and Turkey. Flax undergoes many operations before its fibre is ready for spinning. The seeds are also an important article of commerce, shiploads being imported from the Baltic and the Black Sea for the purpose of crushing, from which Linseed Oil is obtained. The compressed refuse of the seeds forms Oil-cake, used for feeding cattle, and the crushed or ground seeds form Linseed Meal, a valuable emollient for poultices. In dressing, Flax goes through

the process of hackling, by which it is cleared of all extraneous short fibre, which forms the article called Tow. The woven fabric of Flax is called Linen, which varies in texture according to the degree of hackling and other preparations the Flax fibre has undergone. In Scotland, Flax in all its stages, before it is converted into thread, is called Lint,—thus a Lint-field, a Lint-mill, etc. In 1880 the quantity of Flax imported from all countries amounted to 1,896,249 cwts.

Linseed Oil is now extensively employed in the preparation of printers' ink. By heating and other processes it assumes the character of varnish, the black colour being given to it by lamp-black, carbon black, Prussian blue, or indigo. Large quantities of printers' ink, even to hundreds of tons, are now annually made from Linseed Oil.

The best writing paper is made from the pulp of linen rags.

Flax, New Zealand (*Phormium tenax*), a stemless permanent sword-leaved plant of the Lily family (Liliaceæ), native of New Zealand. The leaves are smooth, 4 to 6 feet long, and 2 inches wide, of a firm texture, and abounding in stout fibre. The flowers are red, borne on a scape in panicles. Scape 10 or even more feet in height. In New Zealand it occupies large tracts of country, and is used by the natives for making ropes, mats, etc. Large quantities have been imported into this country. It is tolerably hardy, and about sixty years ago (1822) a company was established for its cultivation in the South of Ireland, but its slow growth caused it to be abandoned.

Flea-bane, African (*Tarchonanthus camphorata*), a strong-growing shrub, often attaining the size of a small tree 10 to 15 feet high, having elliptical, greyish leaves, smelling strongly of camphor, which has led it to be considered efficacious in driving away fleas. It is a native of the Cape of Good Hope. It belongs to the Composite family (Compositæ), and is the largest and most woody representative of this extensive family in South Africa. It is also known by the name of Wild Sage.

Flea-bane Powder.—*Pyrethrum carneum*, *P. roseum*, and *P. purpureum*, natives of Caucasus, and probably varieties only of

one species. They are perennial herbs of the Composite family (Compositæ), with much-divided leaves, varying in the colour of their flowers, as indicated by their names. A powder made of the dried flowers has long been used in Persia and Russia for the destruction of, or rather driving away, fleas. The plant from which it was prepared was long kept a secret, till it was discovered by an Armenian merchant, who communicated it to his son, who in 1828 manufactured the article for sale. It is estimated that the amount of this powder consumed annually in Russia alone is nearly 1,000,000 lbs. It has become popular in Germany, Holland, and France.

Fleur-de-Luce (*Iris germanica*), one of the Iris family (Iridaceæ), indigenous to Germany and other parts of Europe. It is the common large blue Iris or Flag well known in gardens, and was a heraldic emblem in the arms of the Kings of France.

Flintwood, a name in New South Wales for *Eucalyptus pilularis*, a tree of the Myrtle family (Myrtaceæ). Its wood is hard and used for many purposes.

Flower-fence, a name in India for *Cæsalpinia (Poinciana) pulcherrima*, a prickly shrub of the Cæsalpinia section of the Bean family (Leguminosæ). It is common in India and other tropical countries. It has pretty yellow flowers, and is used as an ornamental hedge-plant.

Fly Trap, Venus's. (*See Venus's Fly Trap.*)

Fool's Parsley (*Æthusa Cynapium*), meaning Dog's Parsley, an annual of the Carrot family (Umbelliferæ), native of this country, and common as a weed in cultivated grounds, sometimes growing amongst parsley, which it much resembles (especially the broad-leaved variety), and for which it has been mistaken. It is, however, distinguished by its leaves being of a bluish tint. The reputed poisonous properties of this plant have recently been proved by Dr. Harley (of St. Thomas's Hospital) to be fallacious; he says he "carefully prepared a quantity of juice from young plants, as also in their more mature condition; the quantity thus prepared he gave in doses from two drachms to two ounces, himself taking two to four

fluid ounces; effects were carefully looked for, but there were absolutely none in either case after any one of the doses." In conclusion, he says that "the *Æthusa Cynapium* of Sussex, Kent, Surrey, and Herefordshire is not only absolutely free from the noxious properties attributed to it, but that it is pleasant to sight, smell, and taste, and in the absence of more fragrant and succulent plants, might well be used as a pot-herb and salad." He has analysed all the recorded cases of the deleterious effects of this plant, and in almost every case it is clear that *Æthusa* was not the poison, and that in some cases the hemlock *Conium maculatum* was the offender, the leaves of which in their young state have been mistaken for parsley.

Forbidden Fruit. (*See* Shaddock.)

Forest Oak. (*See* She Oak.)

Foxglove (*Digitalis purpurea*), a plant of the Figwort family (Scrophulariaceæ), one of our most showy native plants, generally found growing on margins and open parts of woods, and conspicuous by its tall spike of pink flowers; there is also a variety with white flowers. From its leaves is obtained a most important medicine, known as Digitalis, but it requires much caution in its use, for if unduly administered it suspends the action of the heart, causing sudden death.

Frangipanni—in English, Breadbreaking—said to derive its name from an ancient family of Rome, who held the office of breaking the bread in the Holy Sacrament. A descendant of this family first invented a method of perfuming gloves, but what the perfume consisted of is not now known. Frangipanni is still the name of a perfume known in commerce. In the West Indies *Plumeria rubra* and *alba*, shrubs of the Dogbane family (Apocynaceæ), are called Frangipanni on account of their deliciously-scented flowers; they are soft-wooded shrubs or small trees, and contain a milky sap.

Frankincense.—Much uncertainty prevails as to the plant, herb, or tree, that yields the fragrant substance first spoken of in Exodus under the name of Frankincense. At the time it was first mentioned the Israelites had not been more than a year out

of Egypt, and were encamped in the desert; therefore, their knowledge of Frankincense and other sweet-smelling substances mentioned with it must have been acquired during their sojourn in Egypt. Admitting that there is, however, no herb or tree native of Egypt that can be identified as producing Frankincense, and the other sweet-smelling substances mentioned in Exodus, we must suppose that they came to Egypt by trade with other countries, and it was long thought to have been the exudation of some species of Juniper, and to have come from Mount Lebanon, hence the Hebrew word *Lebonah* for Frankincense; also as the Fir (*Pinus halepensis*) is a native of Palestine, and yields an aromatic resin, it might with equal propriety, if not more so, be supposed to be the Frankincense known in Egypt, to come from Lebanon by trade from the ports of Tyre or Sidon. Frankincense is not again mentioned till the time of Solomon, when we find that it and other sweet-smelling substances were brought from the South (Arabia) as presents to Solomon by the Queen of Sheba. In modern times much has been written in order to determine the tree that yielded the Queen of Sheba's Frankincense. Recently, a plant supposed to be identical with that tree has been discovered growing in Arabia yielding Frankincense. It is a species of *Boswellia*, a genus of the Myrrh family (Amarydaceæ), and has been named *B. Carterii*, in honour of Mr. Carter, who was the first to figure and describe it in 1843, and who conveyed a living plant of it from Arabia to Bombay, which in 1859 was growing in the Agri-Horticultural Society's Garden at Bombay. Frankincense is also produced by two other species of *Boswellia*, namely *B. Frereana* and *B. Bhanu Dajiana*, which latter is included by some authorities under *B. Carterii*. These are natives of the Somali country of East Africa, and furnish the principal part of the Frankincense of commerce, more generally known as Olibanum. Frankincense trees have winged leaves, and a general resemblance in appearance to the mountain ash, though smaller, more straggling, and much less graceful. Olibanum is also known to be produced by *B. thurifera*, a tall tree, native of India, abundant in the pro-

vince of Behar and Western India, having its leaves crowded at the tops of the branches. The Olibanum is obtained by making incisions in the bark, when the sap exudes and becomes hardened in transparent masses. It finds its way to Bombay, which is also the emporium for African Olibanum. Olibanum, better known as Frankincense, is extensively used as incense in the Greek and Roman Catholic Churches. A gum-resin called Sierra Leone Frankincense is the produce of *Daniellia thurifera*, a large tree of the Cæsalpinieæ section of the Bean family (Leguminosæ), native of Western tropical Africa. The name Frankincense is also applied to the turpentine, which hardens by exposure on the trunks of some species of the *Pinus*, such as *P. australis*, *P. tæda*, and others.

French Bean. (See Kidney Bean.)

French Honeysuckle (*Hedysarum coronarium*), a biennial clover-like plant of the Bean family (Leguminosæ), native of the South of Europe, and cultivated as food for cattle.

Fringe Flower (*Chionanthus virginica*), a shrub or small tree of the Olive family (Oleaceæ), with simple ovate leaves, and white flowers produced in terminal panicles; the corolla is divided into long narrow segments, which gives rise to the name Fringe Flower. It is a native of Virginia, and is hardy in this country.

Fringe (Water) (*Limnanthemum nymphæoides*), a floating aquatic of the Gentian family (Gentianaceæ), native of this country, and originally known by the name of *Menyanthes nymphæoides*, the Fringed Buckbean, from which it differs in having floating round leaves like (but smaller than) the white water-lily. It has pretty yellow flowers fringed in the interior with fine hairs. It is found in the Thames near Oxford, and some years ago it was also found in pools and ponds of the Thames Valley, near London.

Fuchsia, a genus of the Evening Primrose family (Onagraceæ), named by Linnæus in honour of Fuchs, a celebrated German botanist. The typical species of the genus *F. coccinea* was introduced in 1788; it is a native of Chili. It was not till

1823 that other ornamental species began to be introduced, and between that time and 1837 the fine Mexican species, *F. fulgens*, *F. cordata*, and *F. corymbiflora*, were introduced ; since then many others have been added, and numerous fine varieties raised from seed which have become conspicuous and highly patronised garden plants. The fruit of *F. corymbiflora* is an oblong pulpy berry, pleasant to eat and not unwholesome.

Fucus, the name of a Linnæan genus of sea-weeds, originally comprehending a considerable number of species, which by modern botanists have been broken up and characterised under a number of distinct genera, the genus *Fucus* being the type of the family Fucaceæ, part of the order Algæ, of the class Cryptogamia of Linnæus. The species are more or less abundant on the rocky coasts of most countries. They are represented in this country by *Fucus nodosus*, *F. serratus*, *F. vesiculosus*, *Laminaria digitata*, and *L. bulbosa*, known as Tangle ; they are strong-growing species, and may be considered as the shrubs of the ocean. During storms the force of the waves uproots large quantities of sea-weeds of different species, which are wafted on shore and left by the receding tides, such being known by the name of Wrack, the drying and burning of which at one time furnished employment to large numbers of people in Scotland and Ireland. The ashes contain an alkali called Kelp, used in the manufacture of soap and glass ; but since barilla has been used for these purposes the burning of sea-wrack has almost ceased. From the alkali of sea-weeds an important chemical substance called Iodine is obtained, and is well known in medicine and the arts as a powerful absorbent. In agricultural districts wrack is eagerly sought after for manure ; its virtue as such depends principally on the salt it contains. On some parts of the coast of Japan sea-plants are largely collected. They are exported to China and conveyed to the interior, where salt is scarce. Many of them are also edible.

Fungi, the name of one of the orders of the class Cryptogamia of Linnæus, which consists of flowerless plants, the most obvious representatives being those that are well known as toad-

stools, which include the numerous species of the Mushroom tribe; it also includes a number of microscopic bodies, such as mildew, moulds, dry-rot, etc., which grow on living but more abundantly on decayed animal or vegetable matter. They are important factors in reducing all organised bodies to their original elements. The number of so-called species may be said to be beyond calculation; indeed, it seems as though new forms spring into existence according to the nature of the substance upon which they grow; they almost appear to be organisms of chance, many coming into existence and living only a single night. According to the Rev. M. J. Berkeley, the greatest modern writer on this family, the number of species (so called) amounts to about 4000, of which 2380 are natives of Britain. They are found in all countries and situations where animal and plant life exist; they not only grow on lofty trees, in dry pastures and buildings, but also in mines, cellars, drains, and stinking ditches. *Penicillium glaucum* is the blue mould of cheese, jelly, preserves, and woven fabrics when long damp; the iron mould (so called) on linen is a kind of mildew. The most formidable, however, are the potato murrain, grape mildew, dry-rot, smut, coffee and salmon disease, all caused by microscopic species. Fungi are the sole agents in fermentation of sugary liquids, and it is found that yeast, which causes dough to rise, is a fungus. Many such—as mushrooms, morels, and truffles—are wholesome and delicious food, while others are poisonous in the highest degree; many of the latter, being similar to and taken for the true mushroom and used as such, have led to fatal results. Fungi are reproduced by spores, which are so numerous that in the puff-ball when ripe and pressed they are seen to rise in the air like smoke; but to determine their size and form requires the aid of a powerful microscope. They float in the air, and alighting on substances congenial to their development and growth, they thus become spread in different localities. Those that emanate from foul cisterns, water-closets, and drains, are now considered to be the actual cause of contagious diseases, such as typhoid and scarlet fever, cholera, and even diphtheria. It has been proved that milk

quickly becomes impregnated with microscopic fungi from the dairies not being kept clean, and the vessels washed with foul water, which a few years ago was found to be the cause of typhoid fever in London, and it led to an Act of Parliament being passed for the inspection of dairies. Wine cellars are often infested by a filamentous fungus (*Zasmidium cellare*), which covers the walls and casks with a coating like felt; it also attacks the corks of wine bottles, and its appearance is considered a test that the wine is old; this has been taken advantage of by some dealers to make new wine have the appearance of being old by placing a false *Zasmidium* made of spiders' webs, rotten sawdust, and logwood; the wine then passes off as crusted old port. The walls of cellars and mines are also liable to be covered with a fungus-growth termed *Rhizomorpha*; some are phosphorescent to such a degree that in the coal mines near Dresden the roof, walls, and cellars are often entirely covered with them, and their light is so bright as to dazzle the eye, and give the idea of an enchanted cave. Phosphorescent fungi are also commonly to be seen in the dark on decayed wood, rotten leaves, and other decomposed vegetable substances. Tallow stores are often infested with a microscopic fungus, known as Grease Mould (*Mucorini phycomyce*); it covers the walls with a filamentous web; it also attacks the casks and pervades the grease, destroying all fatty matter, and often causing great loss to the merchant. In gardens *Polyactis vulgaris*, a mould fungus, is a great pest; it appears suddenly in a night, its mycelium spreading rapidly over all moist surfaces, doing irremediable mischief in propagating pits by overrunning low plants, cuttings, and seed-pots. Fruits, such as apples and pears, are often attacked by a fungus (*Mucor mucedo*), originating from a small wound in the skin, for although looking perfectly sound their substance is pervaded by a filamentous fungus, which renders them extremely bitter and unfit to eat.

Fungi not only attack living and decaying vegetable matter, but also living animals, and especially insects. In New Zealand the caterpillar of the moth, *Charagia virescens*, buries itself

in the ground to undergo its metamorphosis, where it is attacked by a fungus called *Sphaeria Robertsii*, which rises in the form of a simple spike about 6 inches in height, from the head of the caterpillar, the body of which becomes a dry mummy; a second species, *S. Gunnii*, is found in Tasmania, but it differs from the preceding in being branched; and a third species, *S. sinensis*, is found growing on caterpillars in a similar manner in China, and is held in high estimation as a medicine, said to possess the properties of ginseng. Another species has lately (1879) been discovered in Ceylon growing on a white grub; it rises 2 to 3 inches above the ground; its upper part, which contains the spore-cases, is thickened and of a red colour; it is said to be a new species of the genus *Torrubia*. In the West Indies wasps are affected with a species of *Sphaeria*, which grows on the head like two horns; the spores impregnate them when alive, and the fungus grows to a considerable size before the wasp dies. It is generally understood that fungi do not grow in water, but it is nevertheless now considered that the flocky matter that grows on and destroys gold-fish and salmon is a fungus, *Saprolegnia ferox*. Within the last twenty years great loss has been sustained by the silk cultivators of Europe, consequent on the silkworm being attacked by a microscopic mould fungus, allied to the salmon fungus, known by the name of *Botrytus bassiana*, by some supposed to be a changed form of the Alga *Achyla prolifera*. The thready mycelium covers and perforates the body of the caterpillar, which becomes mummified. This disease has become endemic to the silk-producing countries of Europe, which has rendered it necessary to procure fresh eggs annually from Japan and other countries not yet affected by the disease. In the autumn the common house-fly may be seen dead and adhering to the window pane, the glass surrounding the body being dim; on examining the fly with a lens it will be found to be involved with white flocky matter, the mycelium of a mould fungus, the germ-spores of which had been taken up by the fly in some kind of food.

It is said that a blue-bottle fly might carry about "sufficient

fever spores to infect a parish." (*N.B.*—Most of the above will be specially noticed under their respective names, as also others, such as ergot, smut, pepper-brand, etc.)

Fungus Melitensis (*Cynomorium coccineum*), a fungus-like plant of the family Balanophoraceæ, native of Malta and also found in Northern Africa, the Canary Islands, and Syria. It consists of a fleshy flower-stem, about a foot in height, of a red colour. It was originally much valued for its medicinal virtues, and at Malta, when it first became known, it was specially guarded by a military sentinel, and persons appointed to collect it. In some parts, as the Island of Lancerrotta, it is eaten by the natives, and as it grows on the roots of *Spartium monospermum* (the juniper of Scripture), may explain the passage in Job, "juniper roots for their meat."

Fungus, New Zealand. (*See Jew's Ear.*)

Furze, Gorse, Whins, common names for *Ulex europæus*, a spiny, almost leafless shrub of the Bean family (Leguminosæ), occupying commons and mountain slopes in Scotland and this country, more abundantly in the south. Its most important economical uses are for firewood and as fodder for cattle and horses; for the latter purpose it is crushed between rollers. There is a variety having no prickles, which does not need crushing. Its golden flowers form a beautiful sight, especially when seen on distant hills, and they impart an odour to the air in the vicinity of furze brakes. It has become naturalised in the mountains in Jamaica, where it forms a small tree.

Fustic, a name given to certain yellow woods employed in dyeing—1. *Maclura tinctoria*, a large tree of the Mulberry family (Moraceæ), native of the West Indies and tropical America. 2. *Rhus Cotinus*, a bushy shrub of the Cashew Nut family (Anacardiaceæ), native of Southern Europe, having simple shining roundish leaves. Its flowers are in globose heads, which become white and feathery, giving the idea of a head of white hair, hence the name Wig-tree by which it is sometimes known. It is used for dyeing, and is called in trade Young Fustic to distinguish it from *Maclura*. The yellow wood of several species

of the genus *Xanthoxylon* are also known by the name of Fustic.

Galangale, the name of an aromatic rhizome or tuber produced by different species of the Ginger family (Zingiberaceæ). 1. *Alpinia Galanga*, a herbaceous plant with reed-like leafy stems, 4 to 5 feet high, terminated by a head of flowers; native of India. The rhizome (root-stock) is used medicinally, and forms an article of commerce. 2. *Kæmpferia Galanga*, a stemless herb, annually producing its leaves and flowers direct from the ground; the flowers appear before the leaves, having much the appearance of the autumn crocus. It is a native of India, where its tuberous roots are much used as an aromatic stimulant.

Galangale, English (*Cyperus longus*), a perennial of the Sedge family (Cyperaceæ), native of this country, but rare. It has thick roots, which are aromatic and used as a scent.

Galbanum, a gum-resin issuing from the stems of several perennial plants of the Carrot family (Umbelliferae), referred to *Ferula galbaniflua*, *F. rubricaulis*, and other species, natives of Western Asia. They are strong-rooted plants, the stems of which attain a height of 3 to 6 feet, having finely-divided leaves and umbels of yellow flowers. The gum issues from the stem naturally, or is obtained by cutting it across when young a little above the surface of the ground. The milky juice exudes and soon hardens, and forms one of the kinds of Galbanum of commerce, that issuing from the stem naturally being called Galbanum in tears. The odour of Galbanum is strongly balsamic and pungent, and is used in medicine. The Galbanum spoken of in Exodus has been supposed to be the produce of *Galbanum officinale*, a Syrian plant, or of *Opoidea galbanifera*, both of which, however, are doubtfully determined. Another kind of Galbanum is derived from *Bubon galbanum*, a plant allied to *Ferula*, native of the Cape of Good Hope. It does not possess the properties of true Galbanum; the plant, however, is in high repute among the natives for its medicinal virtues.

Gale, Sweet. (*See* Candleberry Myrtle.)

Galuncha, a Hindoo name for *Tinospora cordifolia*, a climbing shrub of the Moonseed family (Menispermaceæ). It is esteemed by the Hindoos for its antispasmodic and diuretic properties.

Gama Grass. (*See* Buffalo Grass.)

Gambier (*Uncaria Gambir*), native of the Malayan Peninsula and Islands. It is a slender-growing shrub of the Cinchona family (Cinchonaceæ), climbing by the aid of abortive flower-stalks, that become hard hooks. The leaves are oblong, about 2 or 3 inches in length. It is cultivated at Singapore, Sumatra, and other Malayan islands, for the sake of its leaves, from which, by a process of boiling and evaporating, a pasty substance of a light yellow colour is left, which hardens, and is made into cakes or blocks, forming the Gambier of commerce. It is known also by the name of Terra Japonica, large quantities of which are exported to China, where it is used by the natives for chewing with the Betel-nut; as also to this country, for tanning and dyeing. In 1880, 26,364 cwt. were imported.

Gamboge, a gum-resin obtained from the stems of different species of *Garcinia*, a genus of the Gamboge family (Guttiferae). They are natives of Ceylon, India, Siam, and the Malayan Archipelago. There is some uncertainty as to the identity of the several species from which the Gamboge of commerce is obtained. The best comes from Siam, and is supposed to be the produce of *Garcinia Hanburii*. Ceylon Gamboge is obtained from *Garcinia Morella*. *Garcinia pictoria* is abundant in Mysore and Western coast jungles, and yields Gamboge, but is more important for the oil which is obtained from its fruit, and called Gamboge Butter; the fruit also of an allied species, *G. purpurea*, furnishes a similar butter, called Cocum Butter. These oil butters are obtained by pounding the seeds in a mortar; the whole is then boiled, when the oil rises to the surface. It is used for burning in lamps, or as a substitute for butter. Gamboge is used in the arts, chiefly in water-colour painting, as well as for brass lacquering. In medicine it

is a strong purgative, and is one of the principal ingredients in Morison's pills.

Gamboge, American, is the produce of *Vismia guianensis*, a small tree of the Tutsan family (Hypericaceæ), native of Guiana.

Gamote, a native name for the tuberous roots of *Cymopterus montanus*, a perennial herb of the Carrot family (Umbelliferæ), allied to *Thapsia* and *Chærophyllum*, native of New Mexico, where it forms an article of food, its parsnip-like roots being eagerly sought after and collected by the women of certain tribes of native Indians. They are prepared by slicing, drying, and grinding, then stored for future use. It is only in the young state that the tubers can be eaten, when old they become hard. The name Gamote is also applied to the sweet potato (which see).

Garlic. (*See* Onions.)

Garlic Tree, a name in Jamaica for *Cratæva tapia*, a tree of the Caper family (Capparidaceæ), native of the West Indies. The fruit has a strong smell of Garlic, hence the common name of the tree.

Gaub, or **Gab**, names in India for the astringent fruits of *Diospyros Embryopteris*.

Genip-fruit (*Genipa americana*), a tree of the Cinchona family (Cinchonaceæ), native of British Guiana. Its fruit is the size of an orange, and has a thick rind and a succulent agreeable pulp of a brownish colour, equal in flavour to the best orange marmalade.

Genip Tree. (*See* Honeyberry.)

Gentianella (*Gentiana*), a considerable genus of annual and perennial herbs, the type of the Gentian family (Gentianaceæ), many of which are favourites in gardens, such as the plant well known under the above name. *G. acaulis* is a native of the Alps, and said also to be found wild in Wales. But the most important is *G. lutea*, native of Switzerland. It is a showy growing species, with an erect leafy flower-stem, attaining a height of 2 or 3 feet. The leaves are broad and strongly

veined. Flowers yellow, axillary, in tufts. The roots, known as Gentian Roots, are strong, about the thickness of the finger, and highly valued as a tonic in stomach complaints.

Geranium, the Linnaean name of an extensive genus of plants. The name is derived from the Greek word "Geranos," a "Crane." In modern times the genus has been broken up into three sections, namely, *Geranium* proper, *Pelargonium*, and *Erodium*. *Geranium* consists of 40 to 50 species of annual and perennial herbs, the greater number native of Europe, of which twelve are natives of Britain. Their flowers are showy white, blue, or red, and are regular—*i.e.* having five equal-sized petals—which character distinguishes them from the more extensive genus *Pelargonium*, the flowers of which consist of five unequal petals. It derives its name from "Pelargos," a "Stork," hence its name Stork-bills. There are a considerable number of species, all native of the Cape of Good Hope, of which 130 are recorded in *Hortus Kewensis* as having been introduced previous to 1813. They consist of soft-stemmed herbaceous plants; their sweet smell and pretty flowers led them to become early favourites with all under the name of Geraniums; but during the last fifty years they have become extensively cultivated by nurserymen and amateurs, and by hybridising numerous varieties have been established, and Pelargoniums now form one of the principal features at horticultural shows.

Geranium Oil.—This fragrant oil is obtained from *Pelargonium roseum*, a small fleshy-stemmed plant of the Geranium family (Geraniaceae), native of the Cape of Good Hope. It is largely cultivated in France under the name of Rose de Linours. It also yields an acid called Pelargonium Acid, which is used for flavouring wine.

German Tinder, known also by the name of Amadou, is a substance prepared from a solid fungus (*Polyporus fomentarius*), which grows on trees in this country, but more abundantly in Germany, where it is collected in large quantities, and forms a considerable article of trade. It is also cut in slices and beaten

out into large sheets like thick felt, and used for warm under-clothing, and when mixed with saltpetre forms the substance known as German Tinder.

Gherkins. (*See* Cucumber.)

Gilliflower. (*See* Clove.)

Ginger (*Zingiber officinale*), a perennial herb of the family Zingiberaceæ. It is universally cultivated throughout the tropics, and it is impossible to state its native country, but probably it is India. Ginger of commerce is the fleshy rhizome or underground stem, which is lobed or fingered in a peculiar manner, from which proceed reed-like stems clothed with grass-like foliage. Many varieties are in cultivation. It is imported into this country in its dried and bleached state from both the East and West Indies, Africa, and China, but Jamaica Ginger is considered the best. It is largely used as a condiment, and in its green state makes an excellent preserve. In 1880 the importation from all countries amounted to 49,995 cwts.

Gingerbread, or Doum Palm of Egypt (*Hyphæne thebaica*), native of Upper Egypt, Nubia, Abyssinia, and adjacent countries. Its stem is a foot or more in diameter, and by age becomes branched, attaining the height of 20 or more feet, each branch bearing a crown of fan leaves. Its fruits are borne in large pendulous bunches, bearing one or two hundred each. Each fruit is about the size of an apple, and is covered with a fibrous pulp, which has the flavour of Gingerbread, and forms part of the food of the lower classes of Upper Egypt.

Gingerbread Plum (*Parinarium macrophyllum*), a small tree of the Cocoa Plum family (Chrysobalanaceæ), native of Western tropical Africa. Its leaves are oblong and rigid, white on the under side, and strongly veined. The fruit is the size of a magnum bonum plum of an oblong form. Another species, *P. excelsum*, is one of the largest trees on the Sierra Leone Mountains. When in flower its terminal bunches of white blossom render it a peculiar ornament to the forest. The fruit is similar to the last, and on account of the colour of its skin is called the Grey Plum. It is produced in great abun-

dance, is dry and farinaceous, and of an insipid taste ; nevertheless, it is much esteemed by the negroes. Another species is *P. laurinum*, a tree 50 feet high, native of the Fiji Islands, where it is called Makita. It yields a perfume much used for scenting oil. In the time of paganism the leaves of this plant, with the fronds of *Acrostichum aureum*, were used for thatching the roofs and sides of the heathen temples.

Ginger Grass (*Andropogon Nardus*), an Indian grass, similar in habit to *A. Calamus aromaticus*, before mentioned. It yields an essential oil, smelling strongly of ginger, used in perfumery and medicinally by Indian doctors.

Gingilie Oil, a name in India for an oil obtained from *Sesamum indicum*, an annual herb of the Pedaliad family (Pedalineæ), native of India, where it is extensively cultivated for its seeds, which yield an oil similar to olive oil, for which it may be substituted, and with which it is frequently adulterated.

Ginkgo Tree. (See Maidenhair Tree.)

Ginseng (*Panax Schinseng*), a low perennial herb of the Ivy family (Araliaceæ), with forked conical roots ; producing palmate leaves from a sheathing foot-stalk, bearing umbellate green flowers ; a native of Manchuria, North China, but its great use as a medicine in China has caused it to become scarce. The Chinese fancy the forked root resembles the human form, and consider that it wards off all diseases. It consequently has an enormous value with them. It is slightly bitter and aromatic, but of no repute with European doctors. Its scarcity has led to *P. quinquefolium*, an allied species, native of North America, being substituted for it, large quantities being exported to China from New York.

Glasswort (*Salicornia herbacea*), a succulent, jointed stemmed plant of the Spinach family (Chenopodiaceæ), native of the muddy sea-shores of this country. It grows to a height of 6 or more inches ; the stems make a very good pickle.

Salsola Kali and *S. Soda* are branching annual plants, having succulent almost leafless stems, growing to the height of 1 or 2 feet, and found abundantly on the sandy sea-shores of

the temperate and warm countries of the northern hemisphere ; abounding on the shores of the Mediterranean, Canary Islands, etc. By burning, a soda is obtained, which at one time was largely imported under the name of Barilla, and used for making soap and glass ; but since the production of soda from common salt, the imports have not been so large.

Glastonbury Thorn. (*See* Hawthorn.)

Glucose, a name in the United States for a sweet syrup prepared from grains of Indian corn, of which there are numerous manufactories. It is calculated that during the present year (1881) 11,000,000 bushels of corn will be used, and it is probable that it will be doubled in 1882. It is used as a table syrup, in brewing, in vinegar-making, by tobaccoists, wine-merchants, and distillers ; also in candle-making.

Glue, Vegetable (*Combretum guayea* ?), a strong climber of the Myrobalan family (Combretaceæ), native of the countries on the Orinoco. It is remarkable for containing a great quantity of gummy matter, which exudes in abundance on the bark being cut, and is used by the carpenters of Angostura for the same purpose as animal glue is with us. Another species is *C. butyrosu*, a native of South-East Africa, producing a peculiar substance like butter, called by the Caffres Chignite. It is white and hard, somewhat aromatic, and is taken to Mozambique as an article of commerce. It is not known if this substance is obtained from the stem or the kernel of the fruit, and some doubts are entertained as to its really being the produce of a *Combretum*, but judging by the gluey substance obtained from the preceding species, it seems not improbable that a kind of butter may be produced by an allied species.

Goa Bean.—The seeds of *Psophocarpus tetragonolobus* are so called in India. It is a tuberous-rooted, herbaceous, twining plant of the Bean family (Leguminosæ), and is sometimes cultivated in gardens in India for the sake of its seeds, which are like those of the scarlet-runner. It takes its specific name from its four-winged pod, similar to the garden-winged pea of Europe, *Lotus tetragonolobus*.

Gold Cups. (*See* Buttercup.)

Gold of Pleasure. (*See* Rape.)

Gold Thread, a name given to the slender yellow roots of *Coptis trifolia*, a small trifoliate perennial of the Ranunculus family (Ranunculaceæ), native of Canada and Siberia. It is used by the natives for dyeing skins and wool. In medicine it is used as a bitter tonic, and large quantities are sold in the dry herb shops of Boston.

Golden Rod, a common name for numerous species of *Solidago*, a genus of the Composite family (Compositæ). They are herbaceous perennials, the flower-stems rising to a height of 1 to 2 feet, terminated by racemes or panicles of yellow flowers. They are cultivated as ornamental garden plants; with a few exceptions, they are natives of North America, represented in this country by the common Golden Rod (*S. virgaurea*). The leaves of *S. odora* are sweet-smelling, and yield by distillation an essential oil.

Golden Samphire (*Inula crithmoides*), a hardy perennial of the Composite family (Compositæ), native of England, growing in salt marshes. The leaves are fleshy and succulent, and the young branches are often sold as true Samphire.

Gomuti, a name for *Sagus Rumphii*. (*See* Sago.)

Googul, a name in India for the gum obtained from *Balsamodendron Mukul*, a tree of the Myrrh family (Amarydaceæ), growing on limestone about Kurrachee and surrounding districts. The gum is obtained by making incisions in the branches of the tree; the juice is collected as it flows, or is allowed to harden and is then collected. It is chiefly used as a horse medicine, and is given in the cold season, in the belief that it keeps them in health and condition. It is also called Indian Bdellium.

Goora Nut. (*See* Cola Nut.)

Gooseberry, the name of a spiny bush (*Ribes grossularia*), producing the well-known fruit called Gooseberries; it is the type of the Gooseberry family (Grossulariaceæ), which includes the red, white, and black currants. It is found wild in several

parts of this country, and is supposed to be indigenous. It is recorded to have been grown in the garden of Edward I. at Westminster in 1276 as an indigenous fruit.

The Gooseberry appears to have been well known in the time of Henry VIII. and Elizabeth. The name is of uncertain derivation; it is probably a corruption of the French word *groseille*, from *grosse*, large, meaning large berries; and if the first *o* in gooseberry is read *r*, we have the French word *Groseberry*, hence the Scotch name *Grosers* and *Groserts*; and as the kind first cultivated in Scotland, and the only kind grown in some old gardens up to the beginning of the present century, was known by the name of *Green Gascoyns*, it leads to the inference that the first bushes came from Gascony in France, and that the word *Gooseberry* should be read *Groseberry*. By cross breeding many fine varieties have been raised, and are now in general cultivation in this and all temperate countries.

Gooseberry, Barbadoes (*Pereskia aculeata*), a genus of the Cactus family (Cactaceæ), a hard-wooded, trailing or climbing, leafy, prickly, bramble-like shrub, native of the West Indies. Its fruit is about the size of a gooseberry, and is made into a preserve. *P. grandiflorus* is an allied but larger growing species with a hard woody stem, several inches in diameter, and densely covered with long, black spines of formidable character. It has pretty pink flowers.

Gooseberry, Cape. (*See* Winter Cherry.)

Gorgon Plant (*Euryale ferox*), a plant of the Water Lily family (Nymphæaceæ), native of India, having circular leaves 2 or 3 feet in diameter, lying flat on the water, very prickly on their upper surface. The fruit is also prickly, about the size of a small orange, containing black seeds the size of peas, which are full of albumen, and are used by the Hindoos and Chinese for food. It is said to have been cultivated in China for upwards of 3000 years.

Gorse. (*See* Furze.)

Gourd, a general name for an extensive family of plants, called the Gourd family (Cucurbitaceæ), represented by the

Melon, Cucumber, Pumpkin, Vegetable Marrow, Squash, Colocynthis, Snake Gourd, etc. (which see).

Gouty Stem Tree. (*See* Baobab.)

Grains of Paradise, or Melegueta Pepper (*Amomum Melegueta*), a plant of the Ginger family (Zingiberaceæ), native of Western tropical Africa. It throws up a reed-like, herbaceous stem, which produces a pod or capsule containing the seeds, to which the above names are applied. They are carminative, aromatic, and are used to give a false strength to beer and other liquors. Grains of Paradise are also produced by other species of the genus grown in India.

Gram. (*See* Chick Pea.)

Granadilla, the name given in the West Indies to the fruits of different species of *Passiflora*, a genus of the Passion Flower family (Passifloraceæ), natives of the West Indies and tropical America. *P. quadrangularis* has fruit of an oblong form, about 6 inches in diameter, some weighing 3 lbs. When ripe it is of a greenish-yellow colour, and contains a soft pulp of a sweet acid flavour, very grateful and cooling in a hot climate. *P. edulis* is abundant in the West Indies. The fruit is of a light-blue colour and oval, the size of an egg, and is of an agreeable and cooling taste. *P. laurifolia*.—This produces an oval fruit of a lemon colour, about the size of a peach or nectarine. It has a soft skin, and is full of a watery pulp, which is very agreeable. In the West Indies it is called the Water Lemon. *P. maliformis*, a smaller fruit than the water lemon, but similar in flavour, is called the Sweet Calabash. *P. foetida*, Wild Water Lemon, or West Indian Love in a Mist. The fruit of this is about the size of a small cherry; the pulp is very delicate, but the smell of the leaves is very unpleasant. Several other species are esteemed in the West Indies for their fruits. *P. quadrangularis* and *P. edulis* are grown for the sake of their fruits in this country.

Grapes. (*See* Vine.)

Grapple Plant (*Harpagophytum procumbens*), a prostrate herbaceous plant of the Sesamum family (Pedalineeæ), native of

the Cape of Good Hope; its leaves are opposite and palmate; the flowers axillary, on short stalks, of a purple colour; the fruit is a two-valved oblong capsule, about 3 inches in length, furnished on all sides with strong-branched, very sharp hooks, by means of which it lays hold of the clothes of travellers and the skins of animals, and is difficult to remove. When browsing, cattle often get these fruits into their mouths and roar with agony at the pain they endure.

Grasses.—This name includes all species of the Grass family, represented by Wheat, Barley, Oats, Rye, Maize, Rice, and Millet, and pasture, meadow, and cane grasses, each of which is noticed under its respective name. About twenty herbs, chiefly natives of Britain, are improperly called grasses, such as Arrow-grass, Penny-grass, Rib-grass, Scurvy and Whitlow grass, as also grass of Parnassus. Only a few of these are of economic interest.

Grass Cloth, a name given to the woven fibre of *Bœhmeria nivea*, a perennial of the Nettle family (Urticaceæ), native of China. It sends up numerous rod-like stems 4 to 6 feet high, having heart-shaped leaves, silvery-white on the under surface. The stems contain a quantity of fine fibre, which is now imported in considerable quantity from China and India, and woven into the fine linen-like cloth known as China Grass Cloth. It is now extensively cultivated in Jamaica, as also in the Southern United States; and the British Government have lately become interested in its cultivation in such of the colonies as are favourable to its growth. There is, however, some difficulty in separating the fibre from the bark and wood, which has led the Government of India to offer a reward of £5000 for the best mode of overcoming the above difficulty. The plant grows freely in this country, but in severe winters the roots are liable to be injured; it might, however, be profitably cultivated in Cornwall and the western counties. The fibre in Assam called Rhea is also the produce of this species.

Puya Fibre (*Bœhmeria Puya*) is a plant similar to the preceding in habit of growth, but has longer leaves. It is exten-

sively cultivated in Upper India; the fibre is used for making ropes and sail-cloths.

Grass Gum Trees, a name applied to the different species of *Xanthorrhœa*, a genus of the Lily family (Liliaceæ). This remarkable genus consists of nine or ten species, natives of Australia. Stems cylindrical, formed by the closely-packed, broad bases of grass-like leaves, and attaining a foot or more in diameter. *X. arborea* and *X. quadrangularis* attain a height of 6 to 10 feet, and the flower-stem springs like a stout rod from the centre of the crown of leaves, and frequently is 10 to 20 feet long, the upper part being densely covered with small yellowish-white flowers. The leaves are often burnt by the grass fires, leaving the blackened stems standing, which, at a distance, have the appearance of black men, from which circumstance the name Black Boy Trees has been applied to them. The smaller species look like thatched beehives. They yield a fragrant resin of two kinds, called Black Boy, or Botany Bay Gum, and Gum Acaroides. This last yields Picric acid when treated with Nitric acid, and is extensively used in the preparation of the highly explosive compound Picrate of Potassium. This acid is used for dyeing silk and wool, and imparts to them a yellow colour. The gum-resin is sometimes made into candles. These plants are of very slow growth, requiring many years before they form a stem, as shown by an example of a plant at Kew thirty years old, and still stemless.

Grass Tree (*Kingia australis*), a remarkable plant of the Rush family (Juncaceæ), native of South and South-West Australia, growing in dry places. It has a trunk a foot in diameter, composed of the bases of the hard, three-sided grass-like leaves. The leaves are successively produced from the top of the stem, and curve downwards. The older ones fall away, or more often are burnt away by the grass fires, leaving the charred and blackened stems, which in old plants attain a height of 6 to 8 feet. The flowers are small, borne in dense round heads on a foot-stalk about a foot long, several rising from the crown of leaves.

Grass Wrack (*Zostera marina*), an aquatic of the family Naiadaceæ; it has long, narrow, tape-like leaves 3 to 4 feet in length. It is a native of this country, being generally found in the estuaries of tidal rivers, and even in the sea. When dried it is used for packing, stuffing beds, cushions, etc., and is known by the name of *Alva marina*.

Grease Mould. (See Fungi.)

Greenheart.—Two trees are so called, and a third Bastard Greenheart. 1. *Nectandra Rodiæi*, a large tree of the Laurel family (Lauraceæ), native of Guiana. It has a clear stem, attaining a height of 40 to 50 feet, with a diameter of between 2 and 3 feet. Its timber, before the more general use of iron, was highly valued for shipbuilding, and was imported from Demerara for that purpose. 2. *Colubrina ferruginosa*, a tree of the Buckthorn family (Rhamnaceæ), native of Martinique. It has twisted wood, which has led it to be called Snake-wood. 3. Bastard Greenheart (*Calyptrothoe Chytraculia*), a large-growing shrub of the Myrtle family (Myrtaceæ), native of Jamaica.

Greenwood is an artificial production, formed by the green-coloured mycelium of *Peziza æruginosa* (*Helotium æruginosum*), a filamentous fungus which penetrates and traverses the small, fallen branches of the oak tree, and imparts to them a permanent and vivid green colour, which is highly prized for making small ornaments and toys. The genus *Peziza* is a group of small fungi, varying from mere specks to masses of several inches in diameter, and also varying in form and colour, which is generally bright, many of them having the appearance of small lichens; but they differ in their place of growth, which is always on decayed substances, such as fallen leaves, branches, etc., some even on the naked ground.

Groats. (See Oats.)

Ground Nut. (See Earth Pea.)

Groundsel (*Senecio vulgaris*), an annual of the Composite family (Compositæ), native of this country. One of the common pest weeds of all cultivated ground. Sold in the streets of London as green food for caged birds.

Gru-Gru Palm. (*See* Macaw Palm.)

Guaco (*Mikania Guaco*), an opposite-leaved climber of the Composite family (Compositæ), having numerous flower-heads, each consisting of only four florets. It is common throughout tropical America, and is famed as a cure for snake-bites. The name Guaco is also applied to species of *Aristolochia* (*see* Birthwort) and other climbing plants, which are likewise believed to cure snake-bites. Although this has been known since the time of Humboldt, there has, however, not been much evidence in proof of its efficacy; but in a recent communication to Sir Joseph Hooker from Mr. White, who has resided long in New Grenada, he says that when quickly and properly applied, both inwardly and outwardly, it is known to prevent fatal results.

Guarana, the name of a substance in Brazil prepared from the seeds of *Paullinia sorbilis*, a strong-growing, wing-leaved climber of the Soapberry family (Sapindaceæ), native of Brazil, principally the region of the Amazon. The fruit is a pear-shaped, three-sided, three-celled capsule, each cell containing a solitary seed, half enveloped in a somewhat thick aril. The Indians pound the seeds to a meal, which they make into a paste. It is formed into rolls, and when dried becomes hard, and of a dark colour, resembling large sausages. Under the name of Guarana these rolls form an important article of trade to all parts of Brazil. A beverage is prepared by grating about a tablespoonful of the substance from a roll, and placing it in about half a pint of sugar and water. It is greatly used by those employed in laborious work, especially by miners. Its virtue consists in its containing a stimulating principle having properties similar to the theine in tea.

Guava, the name of the fruit of several species of *Psidium*, a genus of the Myrtle family (Myrtaceæ), native of the West Indies and tropical America. They are small-sized trees.

Psidium Guaiava, with the varieties *P. pomiferum* and *P. pyriferum*, are universally cultivated in most tropical countries. The chief difference is in the shape of their fruits, one being apple and the other pear shaped, of a yellow colour outside, and

the pulp red. They are highly esteemed, and come to this country as a preserve under the name of Guava jelly and cheese.

Guava Berry (*Eugenia lineata*), a small tree of the Myrtle family (Myrtaceæ), native of the island of Tortola. Its fruit is small, and is excellent for dessert. It is likewise used as a preserve, and forms a favourite cordial.

Guava Real, the name in New Grenada and Panama for *Inga spectabilis*, a tree of the Mimosa section of the Bean family (Leguminosæ). It is a large, showy tree, with simple, winged leaves. It is cultivated for the sake of its pods, which are two or more feet long and three inches broad, and pendulous. The seeds are embedded in a sweet pulp, which is eaten by the natives. Different species of *Inga* are common throughout the whole of tropical America and the West Indies. The pods of all contain a sweet, mucilaginous, edible pulp. Some kinds are purgative.

Guelder Rose (*Viburnum Opulus*), a stout branching shrub of the Woodbine family (Caprifoliaceæ), native of this country, growing generally in hedges. The flowers are produced in flat umbels, the outer series of florets being abortive, and the petals large and white; but in the cultivated variety the whole of the petals are abortive, and form the well-known snowball flower.

Guinea Corn (*Sorghum vulgare*).—There are many varieties cultivated throughout the tropics. (See Millet.)

Guinea Grass, a name in Dominica for *Panicum jumentorum*, a strong-growing perennial fodder grass.

Guinea Pepper (*Xylopia aromatica*), a tall tree of the Custard Apple family (Anonaceæ), native of Western tropical Africa. It has pointed, egg-shaped leaves, woolly underneath; the fruit consists of a number of dry carpels, about two inches in length, which are aromatic and used as pepper, being sometimes called "Negro Pepper," and by old authors "Piper Æthiopicum."

Gulfweed, a common name for *Sargassum bacciferum*, a seaweed of the Fucus family (Algæ). Its cord-like stems rise from

a great depth, from the apex of which are produced broad leaves (fronds), which float on the surface of the water in such density as to impede the navigation of vessels. It abounds in the meridian of 40° west, and between the latitudes of 20° and 45° north, covering the surface of the ocean for 1,000,000 square miles, known as the Sargasso Sea.

Gum, a general name for sticky matters exuding naturally or by artificial wounds from many different kinds of trees, shrubs, and herbs, of which the following are a few of the principal. They consist of two kinds, those that dissolve in water and have no smell, and those that contain a resin termed Gum-resin, and burn with an aromatic odour, and dissolve in alcohol or other solvents.

Gum Acaroides. (*See* Grass Gum Trees.)

Gum Alk, a gum-resin yielded by *Pistacia Terebinthus*, a small tree of the Cashew Nut family (Anacardiaceæ), native of North Africa.

Gum Anime. (*See* Gum Copal.)

Gum Arabic.—This is obtained from several species of *Acacia*, a genus of the Bean family (Leguminosæ). The principal gum-yielding species are *A. Seyal*, *A. arabica*, *A. nilotica*, *A. Senegal*, and *A. Stenocarpa*; with a few exceptions, they are small spiny trees, the first three being found widely dispersed in India, Western Asia, and Central Africa, and the latter in Western Africa. The gum exudes from the trees naturally, or is accelerated by making incisions in the stems and branches; it soon hardens, and is then collected. It begins to flow at the commencement of the dry season, which is generally about November. About the middle of December the Moors encamp on the border of the Acacia forest, and the harvest lasts six weeks, during which time the Moors live almost entirely upon the gum. It is highly nutritious; six ounces of gum are sufficient to support a man for twenty-four hours. It may be stated that Gum Arabic is collected in localities throughout the whole of Africa, and is conveyed in skins or bags of leather on camels to the ports of the Atlantic, Mediterranean, and the Red Sea, for shipment to various coun-

tries. It is largely imported into this country, the quantity in 1880 being 73,926 cwts., valued at £200,375, and used for various purposes in the arts and manufactures, being extensively employed for stiffening and giving lustre to crape, silk, and other woven fabrics.

Gum, British. (*See* Starch.)

Gum Cistus. (*See* Ladanum.)

Gum Dragon, a name given in commerce to Gum Tragacanth (which see).

Gum Elemi. (*See* Jamaica Birch.)

Gum Euphorbium. (*See* Euphorbia.)

Gum Guaiacum. (*See* Lignum Vitæ.)

Gum Kino (*Pterocarpus marsupium*), a tree of the Bean family (Leguminosæ), native of India, which, with *P. erinaceus* of Western Africa, yields a gum. It is obtained by making incisions in the bark, and is imported for tanning and dyeing. A Gum Kino is also yielded by *P. Dalbergioides*, a large tree, native of Burmah and the Andaman Islands, where it grows to the diameter of 4 feet. Its wood is hard and similar to mahogany. *Butea frondosa* and *B. superba*, East Indian leguminous trees, yield quantities of a reddish-coloured gum-resin, known as Bengal Kino. (*See* Pulas.)

Gum Senegal. (*See* Gum Arabic.)

Gum Tragacanth (*Astragalus gummifer*), a harsh, spiny, low, wing-leaved leguminous shrub, native of desert and mountainous regions of Western Asia. A gum issues from the stem and branches spontaneously, and forms an article of commerce. It is used in the arts as a substitute for glue. Tragacanth is also produced in some of the Greek islands and other parts by several allied species of *Astragalus*.

Gum Trees. (*See* Eucalyptus.)

Gunjah. (*See* Hemp.)

Gunny-bags. (*See* Jute.)

Gutta-percha (*Dichopsis gutta*), a tree of the Star Apple family (Sapotaceæ), attaining a height of from 60 to 70 feet. It has smooth, ovate, entire leaves, of a rusty-brown colour on

the under side. It is a native of the Malayan Peninsula, Borneo, and other islands. It contains a milky juice, which forms Gutta-percha. This substance came into special notice in 1845, and its important uses soon became obvious, and led to a great demand for the article, to meet which the natives cut down the trees. It is consequently now extinct in Singapore, from whence it was first obtained; and if precaution is not taken by Government it will in time become extinct in other localities. The numerous uses to which Gutta-percha is applied are well known; the most important is for covering the electric wires of telegraph cables, it being a perfect insulator, and it is also said to be indestructible under water. A number of other trees of this family yield Gutta-percha in varying abundance and quality. The best is obtained from *Mimusops globosa*, a large tree, native of British Guiana, and apparently also of Surinam, and called Ballata. It is imported in fluctuating quantities from British Guiana, and considered equal to the best Gutta-percha of the East. The total quantity imported in 1880 was 63,334 cwts., valued at £529,452.

Hag or High Taper. (*See* Mullein.)

Hand-flower Tree (*Cheirostemon platanoides*), a large tree of the Silk Cotton family (Bombaceæ), a native of Guatemala, but first known by a single tree of great size growing near the city of Mexico. It has a soft-wooded stem and heart-shaped lobed leaves, and is remarkable for the stamens being flesh-coloured, and so united and turned to one side of the flower that they bear some resemblance to an infant's hand, hence its name.

Hard or Goat Grass, the name given to species of *Ægilops*, of which there are six recorded as natives of the South of Europe. They are annual grasses of dwarf habit and harsh nature, and although extremely unlike wheat, they are nevertheless, according to the Darwinian theory of the origin of species, supposed to have during the lapse of time, either by natural agency or artificial cultivation, assumed the character of cultivated wheat. This is in some degree proved by experiments carried on for a number of years by M. Fabre in France, and in this country by the Agricultural Society in their College Garden

at Cirencester, regarding which, in a report, it is stated that *Æ. ovata* was sown in a plot in 1854. Seeds were taken and sown in different parts of the garden, and their progeny were from year to year carefully re-sown, and the crop for 1860 had many specimens upwards of 2 feet high, and with spikes of flowers containing as many as twelve spikelets. If wheat really originated from *Ægilops ovata*, it must have done so in very early times, as we read of wheat in the time of Jacob 3600 years ago; also, wheat grains are found in the prehistoric lake-cities of Switzerland.

Hare's-foot Fern (*Davallia canariensis*), a multifate fronded fern. It derives its name from the rhizome being covered with soft grey scales, giving it the appearance of a hare's foot. It is a favourite with amateur fern-cultivators. Being a native of Madeira and the Canary Islands, it requires greenhouse protection in winter.

Haricot Bean. (See Kidney Bean.)

Hassagay Tree (*Curtisia faginea*), a middle-sized tree of the Dogwood family (Cornaceæ), a native of South Africa. It is especially important for its wood, of which the Kafirs and other native tribes form their spears, termed hassagays, or assagays, which in their hands form such formidable weapons, as shown by their effects in the late Zulu war.

Hawthorn, or Quick (*Crataegus Oxyacantha*).—This well-known hedge-tree belongs to the Apple family (Pomaceæ), and is a native of most parts of Northern Europe and Asia. When grown singly it attains a height of 20 or more feet, and lives to a great age. It is, however, principally used for forming hedge fences. There are several varieties, distinguished by the colour of their fruit, and in having single or double flowers. The common white May is sweet-smelling; but the variety with scarlet flowers has a disagreeable odour. The Glastonbury Thorn is a variety which flowers in early spring, or even at Christmas, if the weather is mild. In this country the berries are called Haws. *C. aronia* is a bushy species, having a red fleshy fruit larger than the preceding. It is a native of Southern

Europe and Western Asia, and is common about Jerusalem, especially on the Mount of Olives, where its fruit is collected for preserves.

Hay.—In this country various grasses are cultivated for Hay, the principal being *Lolium perenne*, *L. italicum*, *Phleum pratense*, *Poa pratense*, *Cynosurus cristatus*, and other fodder grasses that grow spontaneously in pasture lands; also, *Anthoxanthum odoratum*, the sweet-scented vernal grass. It is this that contains the principle called Coumarin, which imparts the smell to new Hay.

Hazel and Filbert Nuts (*Corylus Avellana*), a bushy shrub of the Oak family (Cupuliferae), throwing up straight rod-like stems, growing wild in woods throughout this country, as also in the temperate parts of Europe, as well as in Western and Northern Asia. The specific name *Avellana* is derived from the name of a place in Italy, where large quantities are grown for exportation. The great supply of the finest nuts comes from Spain, and are called Barcelona Nuts. About 140,000 bushels are recorded to have been imported before 1870, the quantity had then increased to 294,236 bushels.

Heart's-ease. (See Violet.)

Heather, also called **Ling**, names in Scotland for the common heath (*Erica* [*Calluna*] *vulgaris*), a small-leaved shrub, the type of the Heath family (Ericaceae). It covers extensive tracts of hills and moors in this country, and also more especially in Scotland. It is also abundant in many other parts of Europe, and is highly important as a fodder plant for cattle, especially in winter. It is, however, astringent, and not very nutritive; and it is said to impart a red colour to the milk of cows, and that the flesh of sheep fed on it is richer than that of those fed on grass alone. Moor-fowl feed on the young shoots. Heather forms an important article in the domestic and rural economy of the people, being employed for thatching and lining houses. Layers of heath are also used as beds, as well as for making brooms, scrubbing-brushes, ropes, baskets, and the like. The young tops yield a yellow dye, which gives colour to woven fabrics. The flowers

of the common heath, as well as of three other native species, abound in honey, and are much frequented by bees; and it is the custom of bee-keepers in many parts, about the month of August, to convey their hives to the heath districts and to remain during the flowering season. The honey produced is dark, and of a peculiar flavour.

Heaths, a common name for the species of *Erica*, the type of the family Ericaceæ. They consist of small bushy shrubs, seldom exceeding 6 to 8 feet high, all having small leaves, and various-coloured, tubular, globose, urceolate or campanulate flowers. About 500 species are described in books; but many are hybrids raised in gardens in this country, some of which are of extreme beauty, and prizes are offered for the best cultivated and the most showy at horticultural exhibitions. The greater mass of the species are natives of South Africa, of which about 200 were cultivated at Kew a few years ago. They are sparingly represented in the northern hemisphere, ten being found in Europe, of which six are native of Britain, and two extend to Western Syria, one only being found in North America. In Algeria *E. arborea* and *E. multiflora* are common on the mountains.

Hedgehog Thistle, the common name of a considerable number of species forming the section or genus *Echinocactus* of the Cactus family (Cactaceæ). The greater number are natives of Mexico. Their stems consist of round or oblong masses of succulent matter, with numerous ridges, on which are produced many clusters of straight or crooked spines of various sizes. In 1846 two plants were received at Kew from St. Luis Potosi, in Mexico, one measuring $4\frac{1}{2}$ feet in height, and $2\frac{3}{4}$ feet in diameter, weighing 713 lbs.; the other 9 feet in height, rather more than 3 feet in diameter, and weighing about one ton. This species has received the name of *E. visnaga*, on account of its stiff spines having been used as tooth-picks. It is calculated that the number of spines on the smaller plant was 17,600, and on the larger 51,000. An allied species is *E. Stainesi*, of which plants were received at Kew 4 to 5 feet high. In the high plains of Mexico, where water is scarce, the Echinocacti supply

drink to herds of cattle. Although the juice is slimy, it is nevertheless valued for its cooling antifebrile qualities by the Indians. Cattle, especially mules, are very clever in breaking up the cacti with their hoofs, and sucking the juice.

Heliotrope, a familiar name for *Heliotropium peruvianum*, native of Peru, a shrub of the Sebesten family (Cordiaceæ), introduced to this country about the middle of the last century, and has become a general favourite on account of its peculiar smell, and is known by the name of Cherry-pie. It is also called Peruvian Turnsole, but it is not the true Turnsole (which see).

Hellebore, Black (*Helleborus niger*), **Stinking** (*H. foetidus*), **Green** (*H. viridis*), strong perennial-rooted plants of the Buttercup family (Ranunculaceæ). The leaves are palmate or pedate, and with the flower-stalks do not rise more than a foot in height. The Black or Christmas Rose, as its name implies, flowers in December, and is conspicuous at that season for its large white flowers, which are produced on short foot-stalks. It is a native of Southern and Eastern Europe. The root is black, and about as thick as the finger. They have been held in high repute, in ancient as well as in modern times, for the cure of many diseases, being a strong drastic purgative, but dangerous when used in over-doses.

Hellebore, White (*Veratrum album*), a perennial herb of the Colchicum family (Melanthaceæ), native of some parts of Europe, especially in Alpine regions. It has broad elliptical pointed leaves, with prominent longitudinal veins, and a flower-stem rising to a height of 3 to 4 feet, bearing panicles of greenish-white flowers. The roots are thick and fleshy, of a poisonous nature, and though sometimes used medicinally, are not of much repute in this country.

Hemlock (*Conium maculatum*), a biennial of the Carrot and Fennel family (Umbelliferae), common in this country, growing in waste places, hedges, and roadsides. It has a hollow stem marked with reddish spots, rising sometimes to a height of 3 or 4 feet, bearing umbels of white flowers, and much-divided, parsley-like leaves, the whole of a pale-green colour, with a

nauseous smell when bruised. The plant is poisonous in the highest degree, the most active part being the fruit. In medicine it is called *Conium*, and is beneficial in some diseases, when properly administered.

Hemlock Spruce. (*See* Fir Trees.)

Hemlock, Water. (*See* Cowbane.)

Hemp (*Cannabis sativa*), an annual plant of the Nettle family (Urticaceæ), found wild in Northern India and the western parts of Asia; but generally cultivated in temperate and warm regions. It attains an average height of from 8 to 10 feet, but sometimes exceeds the latter. Its fibre is the Hemp of commerce, imported to this country from many parts, the total quantity in 1880 being 1,320,731 cwts. (£1,874,231), the greatest supply being from Russia, and the finest from Italy. It is the principal material of which ropes, ships' cables, and door mats are made, and when woven is known as canvas, and is made into ships' pails, sacks, etc. In India the dried plant is known by the names of Gunjah and Bhang. Gunjah is smoked like tobacco; Bhang is macerated in water and made into a drink: both are stimulating and intoxicating. A resin is collected from the plant, called Churras, in which the properties of Gunjah and Bhang are concentrated. It is collected by coolies, who run violently amongst the plants, the resin sticking to their bodies, or to skins with which they are purposely clothed. The resin, when used in small quantities, produces pleasant sensations; but, if taken in excess, leads to insanity. The seeds are used for feeding caged birds.

Hemp, African, or Bowstring (*Sansevieria guineensis*), a plant of the Lily family (Liliaceæ), native of tropical Africa, having strap-shaped leaves 2 to 4 feet long, and 2 to 3 inches wide. *S. Roxburghiana*, a native of India, has flat leaves similar to the last; but in *S. angolensis*, native of Western tropical Africa, the leaves are cylindrical, and about 1 inch in diameter. The leaves of these plants contain much fibre, which is used for making ropes, and it is stated that the latter produces the best kind of fibre for deep-sea soundings and dredging lines.

Hemp, Canada (*Apocynum cannabinum*), a perennial herb of the Dogbane family (Apocynaceæ), native of North America, having running roots from which rise numerous erect branching stems 2 to 3 feet high, which contain strong fibre, of which the Indians make twine, fishing-nets, bags, and lines, and even a woven fabric like linen. *A. androsæmifolium*, an allied species, also contains fibre.

Hemp, Kentucky.—*Urtica canadensis* and *U. cannabina*, strong-growing perennial herbs of the Nettle family (Urticaceæ), natives of Canada and the Northern United States. They contain a strong fibre, which is known by the name given above.

Hemp, Manilla, the fibre of *Musa textilis*, a perennial of the Plantain and Banana family (Musaceæ), native of the Philippine Islands, where it is largely cultivated in groves, and attains a height of 20 to 30 feet. It is also cultivated in India and other countries for its fibre, which is obtained by hand labour, and when dressed consists of two qualities. The finer is made into beautiful shawls, and the coarser into ropes. In 1880 over 407,000 cwts. were imported to this country alone.

Hemp, Sunn, a name in India for the fibre of *Crotalaria juncea*, a branching shrub of the Bean family (Leguminosæ), native of India. It grows from 8 to 12 feet high, with simple white downy leaves and pretty yellow flowers, but when grown under cultivation the seeds are sown so thickly that the plants rise with a single unbranched stem. When perfect they are cut and put in water for two or three days, which loosens the fibre from the bark and wood. The fibre is then cleaned by beating and washing. It is very strong, and made into ropes, canvas, etc.

Hemp, Jubbulpore (*Crotalaria tenuifolia*), a plant closely allied to the preceding.

Henbane (*Hyoscyamus niger*), an annual or biennial, erect, weedy plant of the Nightshade family (Solanaceæ), with soft broad leaves, growing both in cultivated and waste places. The biennial kind is much valued in medicine, the chief preparation being an extract of the leaves, which is used in the place of opium, also by oculists for dilating the pupil of the eye.

Henna. (*See* Camphire.)

Herb Christopher. (*See* Baneberry.)

Herb of Grace. (*See* Rue.)

Herb of Patience (*Rumex Patientia*), a strong-growing perennial of the Buckwheat family (Polygonaceæ), native of Italy. It is cultivated in this country and used as spinach, as also in France.

Herb of St. Martin, a name very general in tropical America and the West Indies for *Sauvagesia erecta*, an annual or biennial herb of the Violet family (Violaceæ). Its leaves are alternate, lanceolate, mucilaginous, and eaten as spinach. They are considered diuretic, and in Brazil are used in affections of the eye.

Hercules' Club (*Zanthoxylum clava-Herculis*), a tall, rough-stemmed tree, with winged leaves, of the Bean Caper family (Zanthoxyllaceæ). Its wood is yellow, and is a useful timber. In young trees the stems are very prickly, and from them walking-sticks are made and sold under the name of West Indian Briar.

Hickory Nut (*Carya alba*), a large tree of the Walnut family (Juglandaceæ), native of North America, yielding the white hickory nut, which is eaten in large quantities in the United States, and occasionally imported into this country.

Hinau, the name in New Zealand for *Elaeocarpus Hinau*, a tree attaining a height of 40 to 60 feet, and a diameter of 3 to 4 feet. It belongs to the Lime Tree family (Tiliaceæ), and produces a hard white timber, but is not much valued on account of being apt to split. The pulp of the fruit is eaten by the natives, and the bark they use as a black dye.

Hing, a common name in India for Asafoetida (which see).

Hog-gum (*Symphonia globulifera*, better known as *Moronobea coccinea*), a lofty tree, 80 to 100 feet high, belonging to the Gamboge family (Guttiferæ), native of the West Indies and many parts of tropical America. By incisions it yields a gum of the consistency of Burgundy pitch, obtained in considerable quantities. In Jamaica it is known as Hog-gum, on account, it is said, of hogs rubbing themselves against it as it issues from the

trees. Under old trees it is found in lumps measuring 6 to 8 inches in diameter. It is inflammable, and burns with an aromatic odour. In South America torches are made of it. It is used medicinally in many ways for outward application, and also for pills as a substitute for balsam of copaiba.

Hog-plum of Jamaica (*Spondias lutea*), a tree of the Cashew Nut family (Anacardiaceæ), attaining a height of 40 to 50 feet, in general appearance resembling the common ash tree of this country. It is commonly cultivated in Jamaica for the sake of its fruit, which is of an oval shape and yellow colour, having flesh resembling the common plum. It is not much appreciated, but is used for feeding swine.

Holly (*Ilex aquifolium*), the type of the Holly family (Aquifoliaceæ). The common green-leaved Holly is a native of Middle and Southern Europe, as also of this country. It sometimes attains a height of 30 or 40 feet, and has white wood, which is held in repute by cabinetmakers and turners. It is often blackened so as to resemble ebony, and is then used for making teapot and knife and fork handles. Bird lime is made from its bark. It is much planted as an ornamental tree, as well as for forming hedges, the numerous gold and silver leaved varieties being obtained by cultivation. Although its berries afford abundance of food for birds, they are nevertheless poisonous, fatal cases having been recorded through children eating them. The use made of holly and other evergreens for ornamenting churches and dwelling-houses at Christmas is well known, but the origin of the custom is uncertain; it is said to have been practised by the Druids. It was a custom with the Romans to send sprigs of holly with their gifts to their friends during the Saturnalia, as an emblem of good wishes. This was adopted by the early Christians, and the first record of its having been practised in England is in the reign of Henry VI.

Hollyhock (*Althea rosea*), a strong-growing single-stemmed biennial of the Mallow family (Malvaceæ), a well-known showy garden plant, native of China, of which there are many varieties patronised by florists. Of late years Hollyhocks have been

attacked by a mildew fungus called *Puccinia malvacearum*, which blackens the leaves, and the plants die, causing great pecuniary loss to nurserymen. No cure has yet been found for this pest.

Holy Grass (*Hierochloa borealis*), a strong perennial grass, native of many parts of Northern Europe, and in consequence of its being found in Caithness-shire is recorded as a native of Britain. It is a sweet-smelling grass; and in Germany is strewed before the doors of churches on festivals, and is therefore called Holy Grass.

Hominy Meal. (See Maize.)

Honey-berry of Europe. (See Nettle Tree.)

Honey-berry of Guiana (*Melicocca bijuga*), a tree of the Soapberry family (Sapindaceæ), native of Guiana, where it forms large forests. It is also a native of New Grenada, and has become common in most of the West Indian Islands. In Jamaica it is called Genip tree, and attains a height of 40 to 60 feet, and a circumference of 4 to 5 feet. It produces numerous egg-shaped fruits about an inch to an inch and a half in length, the pulp having an agreeable vinous somewhat aromatic flavour.

Honey-flower (*Melianthus major*), a soft-wooded shrub belonging to the natural order Sapindaceæ, with large, unequal, winged glaucous leaves, having a strong odour of pea-meal. The flowers are of a dark-brown colour, produced on terminal racemes a foot or more in length, containing a large quantity of sweet glutinous fluid-like honey, which is collected by the natives of Cape Colony, where the plant is native.

Honey-flowers.—In general the flowers of plants contain honey in greater or less quantity, some in such abundance that it can be collected, and this is particularly the case with *Protea mellifera*, a pretty flowering shrub of the Protea family (Proteaceæ), native of the Cape of Good Hope; its flowers are formed in a large involucre, which contains a sweet watery liquor, and is collected and considered of great use in coughs and pulmonary affections.

Honeysuckle, Australian, a name given in Australia to *Banksia australis* and other species, small trees of the Protea

family (Proteaceæ). They are called Honeysuckles on account of their flowers being full of a sweet liquid like honey, which is sucked by the natives; it is so abundant in *B. ericifolia* and *B. Cunninghamii* that when in flower the ground underneath large cultivated plants is in a complete state of puddle; bees and wasps become intoxicated, and many lose their lives in it.

Honeysuckle, Common. (*See* Woodbine.)

Hop (*Humulus Lupulus*), a well-known perennial plant of the Hemp family (Cannabinaceæ), found wild in the eastern parts of Europe, and known to the ancients. It is now generally cultivated throughout Europe; it was introduced into England about 300 years ago. The female flowers consist of leafy cone-like catkins (strobili) of a light colour, which are called Hops, and are well known as giving the best bitter to beer. The plant is extensively cultivated, more especially in Kent, where the finest Hops are produced. Like its congener Hemp, Hop is a good fibre plant, and in Sweden the manufacture of Hop yarn and linen has long been an established branch of industry.

Hornbeam, Common (*Carpinus Betulus*), a small bushy tree of the Oak family (Cupuliferæ), native of Europe, North America, and the Levant. Its wood is white, hard, heavy, very close-grained and tenacious; it is used for many domestic purposes where large timber is not required. It makes an excellent hedge plant, bears pruning and clipping, and in age becomes very stiff.

Hornbeam, Hop (*Ostrya vulgaris*), a tree of the Oak family (Cupuliferæ), attaining a height of 30 or 40 feet, native of Southern Europe and North America. In general appearance it is similar to the Common Hornbeam, but it is readily distinguished by its female catkins consisting of blunt scales, which are closely imbricate, and when perfect are white, resembling the female catkin of the hop, but it contains no bitter principle. As a tree it possesses no special properties, except that it is ornamental, especially when loaded with its white catkins. A fine specimen more than 100 years old is to be seen in the original part of the Botanic Garden, Kew.

Horse Gram, also called **Kooltee**, names in India for *Dolichos biflorus*, a trifoliate-leaved annual of the Bean family (Leguminosæ). It is cultivated for its pods, which are flat, and curved in the form of a sickle, and are used for feeding cattle.

Horse-radish (*Cochlearia Armoracia*), a strong-rooted perennial of the Cabbage family (Cruciferae), in general cultivation for its pungent roots, which form a universal condiment with roast beef. Although cultivated in private and market gardens in this country, the supply is far short of the demand, and large hogsheads of it are annually imported from Germany.

Horse-tails. (See Dutch Rushes.)

Hounds' Tree. (See Dogwood.)

House-leek (*Sempervivum tectorum*), a well-known domestic plant of the family Crassulaceæ, often seen growing on the roofs of cottages and outhouses. In Ireland it is regarded as a charm, the patch of House-leek on the house being considered a safeguard against fire, and conveying to the poor inhabitants a feeling of great security. In Scotland it is called Fuet, which is a name also given to other similar fleshy-leaved plants, and which seems to agree with the word *phut*, or *phyt*, the Greek for a "plant." It is a common remedy for the cure of warts and corns, and is also a rustic remedy for ringworm.

Humble-plant (*Mimosa pudica*), a small spiny plant of the Mimosa section of the Bean family (Leguminosæ), originally a native of tropical America, but now become indigenous throughout the tropics; its leaves are subdigitate, consisting of generally 3 to 4 pinnæ, which are pinnate, the pinnules small, numerous, and the whole highly sensitive; collapsing on being touched or shaken, and on that account cultivated in hothouses as a curiosity. An allied species is *Mimosa sensitiva*, the sensitive plant, native of Brazil. It is also a spiny plant, but differing in the leaves being conjugate pinnate, each pinna bearing two pairs of ovate leaflets, which are sensitive, but less so than in the preceding species. A specimen of this, cultivated at Kew, formed a spiny bush 2 to 3 feet high, and apparently a climber.

Humiri, the name in Brazil for a fragrant balsam obtained

from *Humirium balsamifera* and *H. floribundum*, trees of the Humiriad family (Humiriaceæ), natives of Brazil and Guiana; they attain a height of 30 to 40 feet, having a thick bark, which when wounded yields a reddish balsamic juice smelling like storax, which hardens and becomes brittle; it is then burnt as a perfume. It is also used medicinally for various complaints, and the bark is used for flambeaux. The wood is of a red colour and used for house-building, and is called Redwood.

Huon Pine (*Dacrydium Franklinii*), a large tree of the Yew family (Taxaceæ), native of Tasmania. The wood is very beautifully marked, something like bird's-eye maple, and is consequently much valued in Tasmania for cabinet-work.

Hurtleberry, the fruit of *Vaccinium Myrtillus*. (See Bilberry.)

Husks of Scripture. (See Carob Tree.)

Hutu, or Futu, the name in Tahiti and other islands for *Barringtonia speciosa*, a tree of the Anchovy Pear family (Barringtoniaceæ). It is a large branching tree, attaining a height of 40 to 50 feet, and a girth of 10 to 14 feet; it has large, shining, ovate, elliptical leaves, and bears a profusion of pink flowers. Its fruit is four-sided and pear-shaped, about 3 inches across the middle, and consists of solid fibrous matter, having only one seed. When dry the fruit is used for fishing-floats. It is a native of the Malayan, Polynesian, and other islands of the Pacific Ocean, growing on the sea-shore. The fruits of this, together with many similar buoyant fruits, are often carried with the currents in the ocean, and cast on distant shores, where they vegetate and establish themselves. It is a rare and handsome plant in the hothouses in this country.

Hya-Hya. (See Cow Tree.)

Hyacinth (*Hyacinthus orientalis*), native of Syria and other parts of Western Asia. It was introduced into this country before the end of the sixteenth century, and is a favourite spring flowering bulb of the Lily family (Liliaceæ), there being many single and double varieties of various colours. It is extensively cultivated at Haarlem in Holland, where there are large farms

devoted entirely to the growth of the Hyacinth and other bulbous plants for the yearly supply of the market of this and other countries.

Hyssop (*Hyssopus officinalis*), a small shrub of the Mint family (Labiatae), not exceeding 1 to 2 feet in height, native of Southern Europe, introduced more than 300 years ago. A favourite aromatic pot-herb, also used in the form of tea as a cure for colds.

Hyssop of Scripture.—As the common Hyssop does not grow in Egypt or Palestine it cannot be the Hyssop of Moses, or that which “springeth out of the wall.” In my *History of Bible Plants* I have endeavoured to show that the Hyssop (Esob of Hebrews) of Moses was the name of any common article in the form of a brush or broom, and may be made of any material suitable for such a purpose. For a full account see *History of Bible Plants*, page 214.

Ice Plant (*Mesembryanthemum crystallinum*), a decumbent annual of the Fig Marigold family (Ficoideæ), native of the coast countries on both sides of the Mediterranean; it is also a native of the Canary Islands and the Cape of Good Hope. It was introduced into this country about 150 years ago, and, on account of its leaves glistening like ice on the hottest summer days, has led to its becoming cultivated in many gardens as a curiosity. In countries where it abounds it, with other species, is burned for its ashes, which contain an alkali used in glass-making.

Iceland Moss (*Cetraria islandica*), a foliaceous lichen, growing about 6 inches high, common in boggy moorlands in the northern parts of this country, and throughout Northern Europe generally; it is extensively collected and made into a nutritious jelly for invalids.

Ilang-Ilang, the name of a perfume derived from the flowers of *Cananga odorata*, a large tree of the Custard Apple family (Anonaceæ), cultivated in India for its sweet-smelling flowers. It is stated to be a native of Sumatra, and introduced to the Calcutta Botanic Garden in 1797. The perfume is very highly esteemed in this country.

Indian Fig.—*Opuntia Tuna* and *O. Ficus-indica* and other species of the Cactus family (Cactaceæ) have received the names of Indian Figs or Prickly Pears. They are common throughout the tropical and sub-tropical countries of America, and since the discovery of that continent they have become naturalised in Southern Europe, many countries of Africa and Asia, even growing on the old walls of Jerusalem. Their stems when young are fleshy and nearly flat, but in age they become cylindrical, hard, and branched; the branches consist of oblong fleshy joints, superposed upon one another, smooth or more generally furnished with strong spines. They seldom exceed a height of 10 to 12 feet, but Humboldt says he saw at Cumana “erect Cactæ (Cereus) and Opuntias 30 to 40 feet high, 4 feet 9 inches in circumference, and covered with lichens, and the wood becomes so hard from age that it resists for centuries both heat and moisture.” They make impenetrable hedges. Their fruits are pear or egg shaped, flat at the top, 2 to 3 inches in length, covered with tufts of small spines, and are of a green, yellow, or red colour; they are wholesome, and are esteemed for their cooling juice. They abound on the lava slopes of Mount Etna, and are the pioneers of cultivation, their roots penetrating and breaking up the lava; they naturally decay in time, forming a rich vegetable mould on which vines are planted. The fruit is collected and sold in large quantities in the markets, forming an extensive article of food to the inhabitants. They contain saccharine matter; their juice is used for colouring confectionery, and in Mexico a drink called Colinche is prepared from them. The plants grow abundantly in other parts of South Europe and in Algeria, from which place the fruits are imported into this country. When old the fibrous parts of the joints of the stems become hard and firm, and are made into ornamental articles.

Indian Paper is made from the bark of *Daphne cannabina*, a small tree of the Spurge Laurel family (Thymelacææ), native of India, China, and Japan. Also of the bark of *Edgeworthia Gardneri*, a shrub or small tree of the same family, native of

the Himalaya. Their bark is by a process of manufacture made into sheets about a yard square, remarkable for toughness, durability, and freeness from the attack of insects, and it is in general use in India for all purposes to which paper is applied.

Indian Shot (*Canna indica*), a well-known ornamental plant of the Arrowroot family (Marantaceæ), said to be a native of India, but now indigenous to most tropical countries. It takes its name from the seeds being black and extremely hard, about the size of swan-shot. There are many varieties which are very beautiful summer decorative plants, and much used in what is termed sub-tropical gardening. *Canna edulis* is cultivated in the West Indies, its fleshy rhizomes yielding a large quantity of starch, which is used for food known as *Tous les mois*.

India-rubber Trees. (See Caoutchouc.)

Indigo (*Indigofera tinctoria*), a slender twiggy shrub of the Bean family (Leguminosæ), with winged leaves, attaining a height of 3 or 4 feet, native of India, and an allied species, *I. Anil*, native of the West Indies, have become very generally disseminated throughout the tropics and sub-tropics of both hemispheres. To obtain the blue colouring matter known as Indigo the whole plant is immersed in water, where it undergoes fermentation and maceration by heating; the water is then drawn off and allowed to settle, the blue matter in suspension falls to the bottom, the clear water is then poured away, and the muddy settlement is dried and made into cakes of various sizes. In Jamaica and parts of tropical America its cultivation has been abandoned, India supplying nearly sufficient for the demand, the import in 1880 being 59,873 cwts. (£1,698,374). The recent discovery of the means of preparing artificial Indigo by a chemical process will no doubt in course of time seriously affect the Indian plantations. Indigo is also obtained from several other plants. 1. In Egypt from *Tephrosia Apollinea*, and on the Niger from *T. toxicaria*, slender shrubs of the Bean family (Leguminosæ), allied to *Indigofera*.

The dye is obtained by soaking the plant in water, the same as with true Indigo. *T. toxicaria* is found in many parts of the tropics, and is employed for poisoning fish; but it does not make them unwholesome. 2. *Marsdenia tinctoria*, a strong perennial, or rather small shrub, of the Swallowwort family (Asclepiadaceæ), native of Pegu and other parts of Eastern India; its willow-like leaves macerated in water yield a fine kind of Indigo, and as the plant is permanent, of free growth, and readily propagated from cuttings, it was thought by Dr. Roxburgh and others that it might be cultivated to such an extent as to yield a greater quantity of Indigo than is obtained from an equally cultivated extent of the true Indigo plant. 3. *Wrightia tinctoria*, a shrub or small tree of the Dogbane family (Apocynaceæ), native of India. By maceration in water its leaves yield a kind of Indigo, in Southern India called Pala Indigo. 4. *Randia aculeata*, a shrub of the Cinchona family (Cinchonaceæ), native of the West Indies. In Jamaica it is called Ink Berry, its fruit yielding a kind of Indigo. 5. *Polygonum tinctorium*. Indigo of good quality is made from this plant in China and Japan.

Indigo, Chinese Green. (*See* Buckthorn.)

Ink Berry. (*See* Indigo.)

Ink Plant. (*See* Coriaria.)

Insect Wax. (*See* Ash and Wax Trees.)

Iodine, a chemical substance obtained from the alkali of burnt seaweeds, used medicinally as a powerful absorbent. (*See* Fucus.)

Ipecacuanha (*Cephaelis Ipecacuanha*), a small soft-stemmed plant, a foot or more in height, having opposite, ovate, oblong leaves $1\frac{1}{2}$ to 2 inches in length, and terminal heads of small inconspicuous flowers. The stems are cæspitose, rising from a creeping knotty root. It belongs to the Cinchona family (Cinchonaceæ), and is a native of the forests throughout Brazil. The roots of this plant are highly valued in medicine in the treatment of dysentery, and as a safe emetic or tonic. From the great demand for these roots it is becoming extirpated

in many parts of Brazil. Attempts have recently been made to introduce it into India and Ceylon, and plants were first sent to Ceylon from Kew in 1848. Since then its cultivation has been tried in different parts of India. The nature of the plant, however, seems to indicate that it would grow better in a wild state than under cultivation. Several other plants are used as substitutes for true Ipecacuanha. 1. *Richardsonia rosea* and *R. scabra*, strong-rooted perennial decumbent herbs of the Cinchona family (Cinchonaceæ), natives of Brazil, where they are called Poaga de Campo. *R. rosea* is extensively cultivated for the sake of its roots, which come to Europe. *R. scabra* is known as White Ipecacuanha. 2. *Psychotria emetica*, a small tree of the Cinchona family (Cinchonaceæ), native of Peru, where it is called Striated Ipecacuanha, but it is of an inferior quality to true Ipecacuanha.

Iris, the botanical name of an extensive genus of herbs, the type of the order Iridaceæ. The root-stock is a fleshy creeping rhizome, from which rise sword-shaped leaves and flower-stems bearing showy flowers of various colours, all highly ornamental garden plants. About 100 species are recorded in books, all being natives of the north temperate zone. *I. germanica*, the common blue Iris, known as Fleur-de-Luce, was the emblem of the French kings. *I. florentina*, native of the South of Europe, furnishes the bulk of the sweet-smelling Orris-root of perfumery. The genus is represented in Britain by the common yellow Iris (*I. pseudacorus*) and *I. fetidissima*, known by the name of Stinking Gladwyn.

Iron-bark. (See Eucalyptus.)

Ironwood.—Not less than between 20 and 30 different kinds of trees are in various countries called Ironwoods, of which the following are a few:—

Ironwood, Bourbon (*Stadtmannia Sideroxylon*), a wing-leaved tree of the Soapberry family (Sapindaceæ), native of Mauritius and Bourbon.

Ironwood, Indian (*Xylia dolabriformis*), formerly *Inga Xylocarpa*, a lofty straight-stemmed tree, with bipinnate leaves,

belonging to the Bean family (Leguminosæ). It attains a large size in the Pegu and Prome forests. Its wood is hard, like ebony.

Mesua ferrea, a tree of the Gamboge family (Guttiferæ), native of India and islands of the Indian Archipelago. It has smooth bark and hard heavy wood. Its flowers are fragrant, and a kind of attar is distilled from them.

Ironwood, Jamaica (*Erythroxylon areolatum*), a tree of the Coca family (Erythroxylaceæ).

Ironwood, Morocco (*Argania Sideroxylon*), a small tree of the Star Apple family. (See Argan.)

Ironwood, Norfolk Island (*Notelæa longifolia*), a tree of the Olive family (Oleaceæ), native of Norfolk Island.

Ironwood, North American, or Lever-wood (*Ostrya virginica*, also *Carpinus americana*), trees of the Oak family (Cupuliferæ).

Ironwood, South African.—*Olea undulata* and *O. capensis*, small trees of the Olive family (Oleaceæ), also *Sideroxylon capense*, a tree of the Star Apple family (Sapotaceæ).

Ironwood, Tasmanian and New South Wales (*Notelæa ligustrina*), a bush of the Olive family (Oleaceæ), 6 to 8 feet high, but occasionally having a single stem 30 feet high. Its wood is very close and hard, and is used in medicine, and for making pulley-blocks, and for turnery and fancy cabinet-work.

Ironwood, White (*Vepris lanceolata*), a tree of the Rue family (Rutaceæ), native of Mauritius.

Ita Palm. (See Miriti.)

Itch Tree (*Oncocarpus vitiensis*), a tree of the Terebinth family (Anacardiaceæ), native of the Fiji Islands. It attains a height of 50 to 60 feet, having large oblong leaves and a curious corky fruit, somewhat resembling the seed-shell of the walnut. The whole tree, especially the bark sap, is highly irritating, a drop falling on the hand imparting the sensation of being touched with a red-hot poker. Dr. Seemann relates an instance of a person having obtained a tree for a flag-staff. In preparing it by peeling, he sat upon the trunk. Shortly after-

wards he was seized with intolerable itching, first in his legs and soon all over his body; all became inflamed, breaking out in pustules, emitting a yellow matter with a fetid odour. The itching continued long painful and irritating, and it was nearly two months before he recovered.

Ivory Nut Palm (*Phytelephas macrocarpa*), native of New Grenada and other parts of Central America. The stem is generally 6 to 8 inches in diameter, suberect, decumbent, or even creeping on the ground, bearing a fascicle of pinnate leaves 18 to 20 feet long, the pinnæ being narrow like those of the date palm. The fruit consists of about forty nuts enclosed in a spathe of a globular form, the size of a man's head, borne on a short foot-stalk issuing from the axis of the leaves, the whole head weighing about 30 lbs. The nuts are about the size of green walnuts, not quite round, covered with a thin pulpy coat, of which a favourite beverage is made by the natives. The nut is very solid, hard, and white, and when polished has the appearance and hardness of ivory. Large quantities are imported to this country and the United States, and made into buttons, umbrella-handles, knobs for doors, work-boxes, toys, etc. This plant was at one time classified amongst the palms, but is now put in an order under the name *Phytelephasiæ*.

The term Vegetable Ivory is also given to the seeds of *Sagus amicarum*, a palm closely allied to the Sago palm, a native of the Friendly Islands. Its nuts are used for the same purpose as the preceding, but are not so hard.

Ivy (*Hedera Helix*), the typical representative of the Ivy family (Araliaceæ). It is very widely spread through Europe and the temperate countries of Asia to Japan. It is generally found in woods adhering to trees, which it ultimately destroys. It also clings to walls and other buildings, and in some cases is considered ornamental. Although a climber, its stem attains a considerable size, one at Montpellier being 6½ feet in girth, and said to be 433 years old. The name *Hedera* was given to it by the ancient Romans, and its specific name *Helix* by Linnæus on account of its harbouring snails. The whole plant is aro-

matic, and a fragrant resin exudes from the old stems when bruised. It was at one time highly valued in medicine, but is now discarded. Its berries afford abundance of food for birds late in the autumn. In ancient mythology the Ivy was dedicated to Bacchus, the God of Wine, and many reasons are assigned for this. In the Book of Maccabees we read that on the Feast of Bacchus being kept, the Jews were compelled to go in procession carrying Ivy.

Ivy, Chinese (*Parechites Thunbergii*), better known in gardens by the name of *Rhynchospermum jasminoides*, a shrub with privet-like leaves, and with sweet-scented jasmine-like flowers. It may be grown as a bush, but its natural habit is to cling to walls like Ivy.

Ivy, West Indian (*Marcgravia umbellata*), the type of the small family termed Marcgraviaceæ. It is a climbing sub-epiphytal shrub, adhering to trees like Ivy. Its leaves are alternate, oval-oblong, and smooth, those on the ascending stem lying flat to the tree; on reaching the top of the tree, numerous leafy branches are produced the same as in common Ivy. Its flowers are produced in umbels of a green colour and of peculiar structure, which makes this family botanically interesting. It is represented in the hothouses at Kew by *M. umbellata* and *Norantea coccinea*.

Jacaranda, a name in Brazil for certain trees of the Bean family (Leguminosæ), producing the fancy woods called Violet-wood, King-wood, and Tiger-wood. The first two are said to be the woods of species of *Dalbergia*, and the third that of *Machærium Schomburgkii*, which is also spoken of as a kind of rosewood (which see). It may here be stated that the botanical names of many of the trees that furnish the fancy woods of commerce have not been clearly determined.

Jacaranda is also the botanical name of a genus of Brazilian trees of the Trumpet-flower family (Bignoniaceæ), of which *J. mimosæfolia*, *J. pubescens*, and others, are cultivated in our hothouses.

Jack-fruit (*Artocarpus integrifolia*), a tree of the Bread-

fruit family (Artocarpaceæ), native of the Indian and Malayan Archipelagoes, where it is extensively grown for the sake of the fleshy portion of the fruit. It is not so palatable to Europeans as the bread-fruit; it is about the size of a large vegetable marrow, often from 12 to 18 inches in length, and 6 to 8 inches in diameter; its nuts, which are the true fruits, are roasted and eaten. The taste of these has been compared to the melon and pine-apple combined, but to some the smell is anything but inviting.

Jaggery Sugar. (*See* Palm Wine.)

Jagua Palm, the native name for *Maximiliana regia*, a noble wing-leaved palm, native of Northern Brazil and the regions of the head-waters of the Orinoco and Amazon. It attains a height of 100 feet, with a head of leaves each 30 feet in length. Its inflorescence consists of a dense bunch of small flowers contained in a spathe 5 feet in length, and when open 2 feet wide, much resembling a boat with a long point like a bowsprit. These spathes when dry are hard and rigid, and used for a variety of domestic purposes by the Indians, such as nursing cradles, baskets, and water-vessels. A palm called Inaja by the Indians appears to be the same species as the Jagua.

Jalap, a well-known purgative medicine, obtained from the tuberous roots of *Exogonium purga*, a climber of the Bindweed family (Convolvulaceæ), native of the mountainous regions of Mexico near Xalapa, hence the name Jalap. Although it has been long prescribed as a purgative medicine under the name of Jalap, its botanical source was not definitely ascertained till about 1830; its tuberous roots are roundish and of variable size, the largest being about the size of an orange and of a dark colour; they contain a resinous principle, which is highly purgative. Jalap of inferior qualities is in different countries obtained from many species of *Ipomœa*, an extensive genus of Bindweeds. *Ipomœa Orizabensis* furnishes what is called Jalap tops, Orizaba root, or Male Jalap, imported from Mexico as a substitute for true Jalap. *I. tuberosa*, known in Jamaica as

the Arbour Vine, is also a Jalap-producing plant ; it has trusses of pretty pink flowers, and grows freely in our hothouses.

Jambolana (*Eugenia Jambolana*), a large tree of the Myrtle family (Myrtaceæ), native of the East Indies. Its wood is hard and durable, and the bark, which is used for dyeing, is astringent. The fruit is about the size of a pigeon's egg, and is eaten.

Japanese Clover (*Lespedeza striata*), a perennial clover-like herb of the Bean family (Leguminosæ), native of Japan. It has become naturalised in the Southern States of North America, where it is known by the name of Japan Clover, and is used for feeding horses and cattle.

Jarool. (See Bloodwood, Indian.)

Jarrah, a name in New South Wales for the wood of *Eucalyptus Marginata*, a tall tree of the Myrtle family (Myrtaceæ).

Jasmine, Common White (*Jasminum officinale*), a slender-stemmed, wing-leaved, trailing shrub of the Olive family (Oleaceæ), supposed to be originally a native of India, but to have become early indigenous in Southern Europe, and it also appears to have been known in this country about the middle of the sixteenth century ; its sweet-smelling white flowers make it a general favourite, and being perfectly hardy, its rambling growth makes it well adapted for covering arbours. *J. Sambac* is a native of India, generally known by the name of Arabian Jasmine ; it has simple opposite leaves, and white fragrant flowers, of which there are single and double varieties. Allied to the preceding are *J. azoricum*, native of Madeira, and *J. hirsutum*, said to be native of China, all well suited for growing on trellises and walls in greenhouses. *J. nudiflorum*, native of China, is nearly hardy, and is interesting as producing its pretty yellow flowers early in the spring, before the leaves expand. *J. grandifolium* is a wing-leaved, large-flowered, fragrant species, native of the East Indies, known by the name of Spanish or Catalonian Jasmine. The flowers of the *J. officinale*, *J. Sambac*, and others, yield fragrant oils, known as Oil of Jasmine.

Jelly Plant of Australia, a name in Australia for *Eucheuma*

speciosum, a plant of the Seaweed family (Fucaceæ); it is gelatinous, and forms an excellent jelly.

Jerusalem Artichoke (*Helianthus tuberosus*).—It is a strong-rooted perennial of the Composite family (Compositæ), having rod-like stems attaining a height of 6 to 10 feet, with alternate broad leaves and solitary terminal yellow flowers. It is said to be a native of Brazil, and was introduced to this country about 250 years ago, and cultivated in gardens for its roots, which are similar to small potatoes, and before potatoes were known they were much used in this country as an article of food. This plant is quite distinct from the true artichoke; the name has nothing to do with Jerusalem, but is derived from the Italian "Gerasoli articcocco," meaning Sun-flower Artichoke.

Jerusalem Thorn, in Jamaica a name for *Parkinsonia aculeata*, a bushy, spiny, wing-leaved shrub of the Bean family (Leguminosæ), attaining a height of 10 to 15 feet, common throughout the whole of tropical and sub-tropical America, and has also become naturalised in many parts of the eastern hemisphere. It is chiefly used as a hedge plant.

Jesuit's Bark. (See Cinchona.)

Jesuit's Tea (*Psoralea glandulosa*), a trifoliate-leaved bushy shrub of the Bean family (Leguminosæ). It is a native of Chili, where it is used as tea, but it appears to be more valued for its vermifuge properties as a medicine than as a pleasant beverage. The plant has been introduced to the Mauritius, and has acquired some reputation as a remedy for diseases of the respiratory organs.

Jew's Ear (*Hirneola auricula Judæ*), a species of the Fungus family belonging to the Tremellini group. It consists of a dark, soft, cup-shaped body, about the size and resembling the shape of the ear. It is generally found growing on elder trees in damp places. It is considered to possess some medicinal virtues, and is represented in New Zealand by *H. polytricha*, common throughout that colony on decaying trees. It is largely collected and imported to China, where it is highly prized as a medicine and

for use in soups, and is eaten on fast-days. In 1878 no less than 838 tons of this fungus were conveyed to China, the value of which is estimated to amount to about £50,000.

Jew's Mallow (*Corchorus olitorius*), an annual of the Lime Tree family (Tiliaceæ), similar in habit to the jute plant, and like it cultivated in India for its fibre. It is also common in Syria and Egypt, where its young sprouts are eaten as a vegetable, like asparagus. It is said to be a favourite with the Jews, and hence the name Jew's Mallow. It has, however, no relation to the genus *Malva*. (See Mallows.)

Job's Tears (*Coix lacryma*), an annual grass, a foot or more in height, native of India. The flowers are few, produced in loose panicles, becoming pendulous with the weight of the seeds, which are oblong globose, about the size of peas, hard and pearly; they are not only used as beads, but are made into little caskets and such like ornamental articles.

John Crow's Nose, a name in Jamaica for *Phyllocoryne jamaicensis*, a curious fungoid-looking plant of the family Balanophoraceæ, native of Jamaica. It has a lobed root-stock, from which rise the flower-stalks, which are about the thickness of the finger and 3 to 6 inches in length, covered with leafy scales, terminated by an oblong head of inconspicuous flowers. No virtue is ascribed to it.

Judas Tree (*Cercis Siliquastrum*), a stiff-branched tree, 20 to 30 feet high, of the Bean family (Leguminosæ), with simple deciduous leaves and papilionaceous pink flowers, which are sessile, produced on the old wood and branches of the tree before the leaves appear, giving the tree a remarkable appearance. It is common throughout Southern Europe and Western Asia and Japan. The wood is hard, blotchy, and waved, and takes a fine polish. It has been long known by the name of Judas Tree, it being supposed to have been the tree on which Judas hanged himself; but there is no historical evidence to show that Judas hanged himself on a tree. St. Matthew simply says, "He went out and hanged himself."

Jujube, the name of the fruits of *Zizyphus vulgaris*, Z.

mucronata, and *Z. jujuba*, stiff-branched, hooked, spiny shrubs or small trees of the Buckthorn family (Rhamnaceæ). It is widely distributed throughout Southern Europe, North and West Africa, and Western Asia. According to Pliny, it is not indigenous to Italy, but was introduced in the reign of Augustus and planted on the ramparts of Rome. The fruit is a pulpy drupe of an oval form, about the size of a plum. It is rather acid when fresh, but when dried it is eaten in large quantities, and forms the Jujubes of the shops. They were at one time considered good for coughs, and the lozenges known as jujubes were either made from or flavoured with them. *Z. jujuba* is common throughout India and China, and yields an excellent dessert fruit, of which in China there are many varieties cultivated. *Z. mucronata* is common in many parts of Central Africa, and it is described by Mungo Park as having "small farinaceous berries of a yellow colour and delicious taste." These berries are much esteemed by the natives. By drying and pounding them the farinaceous part is separated from the stone, and made into a kind of bread, which has a flavour resembling gingerbread. The stones are put into water and well shaken; the farinaceous pulp remaining then separates, and the water becomes sweet, and with the addition of a little millet meal makes an agreeable drink. This was probably identical with the *Rhamnus Lotus* of Linnæus. There is little doubt that it was the Lotus spoken of by Pliny as furnishing the food of the ancient Libyan people called Lotophagi. This is, however, doubted by some. (See Nettle Tree.)

Juniper (*Juniperus communis*), a low bushy shrub of the Cypress section of the Coniferæ family, found growing in uncultivated heathy and rocky places throughout Europe. Its berries are used for flavouring gin.

Juniper Roots of Scripture. (See Retama.)

Jupati Palm, the native name for *Raphia tædigeræ*, a noble wing-leaved palm, native of the lower valley of the Amazon and Orinoco. The wood is used by the natives for the walls of their houses, and for many other domestic purposes. An allied

species is *R. Ruffia*, native of Madagascar and Mauritius, remarkable for its large fruiting spadices. A specimen in the Kew Museum measures nearly 15 feet in length, and weighs between 200 and 300 lbs. Each fruit is about the size of an egg. The shell consists of closely-imbricated smooth scales, which when dry are hard and of a brown colour. The cuticle of the leaves of this palm has of late years been imported into this country in considerable quantities for tying plants, instead of bass, under the name of Raffia or Roffia.

Jute, the fibre of *Corchorus capsularis* and *C. olitorius*, plants of the Lime Tree family (Tiliaceæ). They are slender-stemmed annuals, attaining a height of 8 to 12 feet, native of and extensively cultivated in India. Originally the fibre was principally used for making gunny-bags for the export of sugar, coffee, etc. Of late years it has become an extensive article of commerce in its raw state to this country, as well as to America, and is manufactured largely into carpets, mats, canvas, and other goods, and is even made into such fine threads as to be woven with silk. Jute in bulk in its raw state is liable to spontaneous combustion, and ship and warehouse fires have resulted from this cause. Its extended use is shown by the imports, which in 1851 were 21,000 tons, and in 1880 4,640,645 cwts.

Juvia. (*See* Brazil Nut.)

Kaffir Tree (*Erythrina caffra*), a prickly-stemmed tree of the Bean family (Leguminosæ), attaining a height of 50 to 60 feet, native of South Africa. Its wood is soft, and its trunk is hollowed out for making canoes, and being light, it is sometimes substituted for cork in its native country.

Kale, Indian.—*Caladium sagittifolium*, *C. nymphaefolium*, and *Arum divaricatum*, species of the Arum family (Aroideæ). Their leaves are used as a vegetable in the Fiji and Sandwich Islands.

Kale, Sea (*Crambe maritima*), a strong-growing perennial of the Cabbage family (Cruciferæ), native of the sea-coasts of this country, especially of the South. It has long been culti-

vated in gardens, and its young stalks when blanched form in early spring a wholesome vegetable. Kale is also a name given to certain loose-leaved varieties of Cabbage, such as Long Kale, Scotch Kale, etc.

Kalmia, a familiar botanical name for a genus of beautiful evergreen shrubs of the Heath family (Ericaceæ), native of North America, and now common in gardens in this country. *K. latifolia* possesses the poisonous properties common to many of the Heath family. The honey made from its flowers is poisonous, as also the flesh of game that feed on its berries. In 1790 great mortality took place at Philadelphia, which was ascertained to be caused by eating honey from, and game that had fed on, Kalmia berries. The fatality led to a public proclamation prohibiting the use of either game or honey.

Kamala, a name in India for the dust-like hairs that cover the capsules of *Mallotus philippinensis*, better known as *Rottlera tinctoria*, a tree of the Spurge family (Euphorbiaceæ), common throughout the Madras Presidency. When ripe the powder is shaken off the capsules; it is of a red colour, and forms a considerable article of trade in Hyderabad and other parts of the Circars, and is also imported into this country. It is used for dyeing silk a beautiful orange colour, and by a different process produces a scarlet.

Kambala, a name in Calcutta for *Sonneratia apetala*, a tree of the Myrtle family (Myrtaceæ), growing abundantly in the Sunderbunds. Its wood is red, and is chiefly used in Calcutta for making boxes for packing beer and wine, and for house-building.

Kangaroo Grass (*Anthistiria australis*), a perennial grass, native of Australia, where it occupies vast tracts, and is extensively used for feeding cattle.

Karaka and **Kopi**, names given by the natives of New Zealand to *Corynocarpus levigatus*, a handsome tree of the Cashew Nut family (Anacardiaceæ). It is said to attain a height of 40 to 50 feet, having smooth, broad, laurel-like leaves, with small white flowers in clusters. The fruit is oblong, about

the size of a plum, pulpy, and of a sweetish taste, containing a single seed. The pulp is esteemed by the natives, as is also the seed, but the latter in a raw state is highly poisonous. It is, however, rendered wholesome by being first steamed and then buried in the earth for some days ; but even when thus prepared fatal results have arisen. In early times such food as this was used in periods of scarcity. It is, however, now displaced by the introduction of other food plants.

Kât (*Catha edulis*), a shrub of the Spindle Tree family (Celastraceæ). It attains a height of 10 or more feet, and has rusty-coloured leaves not unlike those of the strawberry tree. It is a native of Yemen and other parts of Arabia, where it is extensively cultivated for its leaves, which have properties similar to those of tea and coffee, and they have been used by the Arabs as such from time immemorial. They are either used for preparing a decoction, or are chewed. They are considered by the Arabs highly stimulating, producing wakefulness and hilarity. This tea is brought to Aden in bundles on camels to the amount of 300 camel loads per year.

Kauri Pine. (*See* Dammar.)

Kava, or **Ava** (*Piper methysticum*), a knotted, erect, soft-stemmed shrub of the Pepper family (Piperaceæ), 8 or 9 feet high, with heart-shaped, dark-green leaves. It is a native of many of the islands of the Pacific, where it is in common use for making a stimulating and intoxicating drink, which is prepared by chewing the root and ejecting the saliva into a bowl, varying in size according to the rank and number of the parties for which it is prepared. After a certain quantity of juice is obtained, water is added ; it is then well stirred and strained, when it is fit to drink, and the whole party partake of it. The ladle, as it may be called, is a bunch of tow (fibre of the Paper Mulberry, or of *Hibiscus tiliaceus*), which is dipped into the liquid and squeezed into the drinking cup. The late Captain Sir Everard Home informed me that he was a guest of a royal banquet at Tonga-ta-boo, and witnessed the whole operation of preparing the drink, and that as much etiquette and ceremony is observed

in preparing and drinking the Kava as in the most polite societies of Europe on festive occasions. A royal bowl in form of a boat may be seen in the Museum at Kew. The use of this disgusting drink is said to be rapidly dying out.

Kaw Tabua, a name in the Fiji Islands for *Podocarpus cupressina*, a tree of the Yew family (Taxaceæ), common throughout the Indian Archipelago, Philippines, New Hebrides, and Fiji Islands. It is a highly-ornamental tree, having horizontal yew-like branches. In Penang and Java it is said to attain a height of 200 feet, and is one of the best timber trees of Java. It was introduced to the Royal Gardens, Kew, from Penang, and in 1864 a tree had attained the height of 20 feet in the Palm-house.

Kawaka, a name in New Zealand for the Cypress Cedar (*Libocedrus Doniana*), a tree of the Coniferæ family, native of New Zealand. This noble tree attains a height of 60 to 100 feet, and 3 to 5 feet diameter. Its wood is of a reddish colour, fine-grained and heavy. It is used for carving and for planks and spars.

Keklani, a name in the Bengal bazaars for the fruit of *Limonia carnosa* (?), a small tree of the Orange family (Aurantiaceæ). The fruit is the size of a hazel nut; it is a favourite spice in India.

Kelp. (See *Fucus*.)

Kendal Green (*Genista tinctoria*), a low bushy shrub of the Bean family (Leguminosæ), native of Central and Southern Europe; it is common in England, and has become naturalised in the United States. It is also known by the names of Woad-waxen and Dyer's Green Weed. It yields a yellow dye, but by a mordant becomes a permanent green. This was originally used by the Flemish weavers who settled at Kendal in Westmoreland, hence it was called Kendal Green.

Kentucky Coffee Tree (*Gymnocladus canadensis*), a large hard-wooded tree of the Bean family (Leguminosæ), having large, compound, deciduous, winged leaves, 3 feet in length and 2 feet in width, abundant in the Northern United States and

Canada. It has small irregular white flowers. The fruit is a true legume or pod, 6 to 8 inches long by 2 broad, hard and flattened, containing flattish seeds embedded in pulp. In Kentucky and Tennessee the seeds were in early times used as a substitute for coffee, hence the name Kentucky Coffee Tree, but their use was given up on true coffee becoming easily obtainable. In favourable localities the tree attains a height of 50 to 60 feet, with an average diameter of 1 to 2 feet, frequently destitute of branches for the first 30 feet, covered with a rough scaly bark, which becomes loosened and rolled up in strips, giving to the tree a remarkable appearance. It is extremely bitter and saponaceous, forming a froth on water like soap. Its timber is hard, and used for many purposes. In the original arboretum at Kew there is a good example of this tree, which in 1864 was a hundred years old, being one of a collection of trees presented by the then Duke of Argyle to George III. on the establishment of the Gardens. In summer its fine foliage forms an important feature, but in winter its thick rigid branches give it the appearance of being a dead tree.

Kermes. (*See Oak.*)

Ketchup. (*See Mushrooms.*)

Kidney or French Beans (*Phaseolus vulgaris*), an erect dwarf annual, supposed to have been originally a native of Western Asia, now universally cultivated for the sake of its young pods. There are numerous varieties, one of which is called Haricot; the dried beans of this variety form a considerable article of food in France and Italy, and are sometimes used in this country. In the first year of the potato famine (1847), 1200 quarters of Haricot beans were imported from America.

King Cups. (*See Bulrush.*)

Kinka Oil (*Vernonia anthelmintica*), an annual herb of the Composite family (Compositæ), common in many parts of India. Its seeds by pressure yield a solid green oil, possessing valuable properties, which promise to make it of considerable value in the arts.

Kino, Gum. (*See Gum Kino.*)

Kipper Nuts. (*See* Earth Chestnut.)

Knapweed. (*See* Bluebottle.)

Koa, a name in the Sandwich Islands for a species of *Acacia* called *A. Koa*, but more probably *A. heterophylla*. A tree of moderate height, and a foot and a half or more in diameter. It is an extremely handsome dark wood, with shades of lighter colour, and beautifully mottled; boxes or chests are sometimes made of it.

Kokoon (*Kokoona zeylanica*), a native name in Ceylon of a lofty tree of the Hippocratea family. The bark is yellow and corky, and is made into a kind of snuff, and used by the Cingalese; it excites copious secretions, and is considered beneficial in headache. Its seeds yield a lamp oil.

Kokra-wood (*Aporosa* [*Lepidostachys*] *Roxburghii*), a tree of the Spurgewort family (Euphorbiaceæ), with simple laurel-like leaves, native of India. The wood is used for many purposes.

Koot. (*See* Costus.)

Kotukutuki, name in New Zealand for *Fuchsia excorticata*, a tree of the Evening Primrose family (Onagraceæ). It attains a height of 10 to 30 feet. Its wood is durable and well adapted for house-building, and by using iron as a mordant forms various-coloured dyes, even to black.

Kumquat (*Citrus japonica*), a small tree of the Orange family (Aurantiaceæ), native of Japan and China. In Chusan it occupies extensive slopes of hills, bearing abundance of yellow fruit, which when ripe presents a very grand appearance. The fruit is preserved in jars, and forms an important export. The plant has been recently introduced into this country, but is too tender for the open air.

Lablab, a name in India for certain kinds of pulse plants, and now adopted as a genus of the Bean family (Leguminosæ). *L. vulgaris* and *L. cultratus* are herbaceous twining plants, similar in growth and habit to the scarlet-runner, originally natives of India, but now cultivated in most warm countries for the sake of their pods and seeds. Like the kidney bean, there are many varieties cultivated. The natives use them for covering arbours.

Laburnum (*Cytisus Laburnum*), the common Laburnum, and *C. alpinum*. These well-known ornamental trees belong to the Bean family (Leguminosæ). They are natives of Switzerland and the elevated regions of France and North Germany. It is recorded that the common Laburnum was grown by Dr. Gerard in his garden at Holborn in 1596. They seldom exceed 30 feet in height in this country, 20 feet being about the average; and about a foot in diameter. The wood is hard, the centre of a dark colour, and takes a polish like ebony, and is valued for turnery work. A poisonous principle pervades the tree, especially in the seeds and roots. The former act as a violent emetic, sufficient to be considered poisonous. The roots are sweet, and taste like stick liquorice; but they are also poisonous, as is shown by the fact of a number of boys of the Forest Gate Industrial School having nearly lost their lives from having chewed the roots; they became drowsy, and fell asleep even while being walked about; emetics were administered, and they all recovered. A hybrid, between *C. Laburnum* and a small shrubby species *C. purpureus*, called *C. Adami*, is remarkable for producing the common yellow and dusky red flowers on the same tree, or even on the same branch, as also tufts of the shrubby *C. purpureus* on different parts of the same tree. This curious hybridisation is perpetuated by grafting scions of it on the common Laburnum. This morphism, which originated in M. Adam's gardens at Paris in 1828, still continues to be an unexplained puzzle to physiologists.

Laburnum, New Zealand, *Edwardsia microphylla* and *E. grandiflora*, showy flowering shrubs of the Bean family (Leguminosæ), natives of New Zealand. Their introduction into this country was due to Cook's third voyage, 1772; two original plants grew against the walls of the Royal Botanic Gardens, Kew, but were killed by the severity of the winter of 1838.

Lac Tree (*Schleichera trifuga*), a tree of the Soapberry family (Sapindaceæ), native of Ceylon, India, and abundant in Pegu and other forests in Burmah. It is a valuable timber, and is employed by the natives for all purposes requiring strength.

It is also important for producing the substance called Lac, which is a gummy exudation caused by a small insect breeding upon the young branches. It forms a small portion of the Ceylon Lac of commerce.

In Ceylon, a resin called Lac exudes from the stem and branches of *Croton lacciferum*, and in Mexico from *C. Draco*, which is used as a varnish.

Lace Bark (*Lagetta lintearia*), a small tree of the Spurge Laurel family (Thymelæaceæ), native of Jamaica, growing on limestone rocks, and insinuating its roots in the fissures. It has broad, somewhat roundish leaves, and flowers like lily of the valley, the fruit being a pulpy white berry. It is remarkable for its bark, which separates into twenty or more layers, becoming like lace, and was at one time used in Jamaica for many domestic purposes, such as net-caps, bonnets, veils, ruffles, etc. It is said that Charles II. had a cravat made of it. With care it will bear washing. During the time of slavery, whips and thongs were made of it.

Lacquer, Japan. (See Varnish.)

Ladanum, Gum, this is an exudation from the leaves of several species of *Cistus*, a genus of the Rock Rose family (Cistineæ); the special species are *C. villosus*, *C. creticus*, *C. salvifolius*, and *C. ladaniferus*, natives of the rocky countries of Gilead and other parts of Palestine and the islands of the Mediterranean. The gum is collected during the heat of the day by drawing a bunch of leather thongs, or some loose woven material to which the gum adheres, over the bushes. It also adheres to the beards of goats browsing amongst the bushes, from which it is scraped off. Ladanum is supposed to be the same as the Hebrew word "Lôt," which in our Bible is translated "Myrrh," so that some consider it to be the myrrh which the Israelites carried into Egypt, but not the myrrh of Moses. (See Myrrh.) Gum Ladanum was once held in high medicinal reputation, but is now chiefly used in perfumery.

Lakao. (See Buckthorn.)

Lancewood, Australian (*Backhousia australis*), a small

tree of the Myrtle family (Myrtaceæ), plentiful on the banks of the Nepean River, New South Wales. The natives make their bows of it.

Lancewood, Guiana (*Duguetia Guitarensis*), a tree of the Custard Apple family (Anonaceæ), seldom attaining more than 20 feet in height. Its wood is tough and elastic, and is imported into this country from Guiana and Cuba; also that of *Guatteria virgata*, *Rollinia multiflora*, and *R. longifolia*, trees of the same family, natives of Brazil and Guiana, are used for the same purpose as Lancewood, chiefly for shafts of carriages, whip handles, tops of fishing rods, for cabinet-work, and ornamental articles.

Lancewood, Jamaica (*Uvaria lanceolata*), a small tree of the Custard Apple family (Anonaceæ), native of Jamaica.

Lanseh, the Malayan name for the fruit of *Lansium domesticum*, a tree of the Bead Tree family (Meliaceæ), native of, and cultivated throughout, the Malayan Islands. The fruit is the size of a pigeon's egg, of a yellow colour, and is produced in bunches; when ripe it consists of a transparent pleasant subacid pulp, enclosed in a very bitter skin, which has to be removed before the fruit is eaten. There appear to be several varieties cultivated, some more bitter than others. The natives consider it next to the Mangosteen and Durian in flavour, and Europeans rank it second of the Malayan fruits.

Larch (*Larix europæa*), a tree of the Fir family (Coniferæ). The larch forms large forests in Switzerland and other parts of Europe, and is extensively planted in this country for its timber. It forms an ornamental tree, sometimes attaining a great height, and is the only European species of the family that sheds its leaves. In Scotland (Perthshire) trees are to be found measuring 21 feet in circumference. It yields Venice turpentine, which is used in medicine. Of late years the Larch in this country has been subject to a disease which has much deteriorated its value as a forest tree. *Larix Kämpferi*, a native of China, is in habit similar to the European *Larix*, but with a more glaucous hue in the leaves, and is called the Golden Larch.

It is described by Mr. Fortune as attaining a height of 120 to 130 feet, with a clear stem of 50 feet, and a girth of 5 feet near the ground. It was introduced about fifteen years ago, grows freely, and appears quite hardy.

Laser Cyrenaicum. (*See* Carrot, Deadly.)

Lattice Leaf (*Ouvirandra fenestralis*), a plant of the family Naiadaceæ, native of shallow waters in Madagascar. Its leaves have long foot-stalks, which grow from a rhizome, and vary from 12 to 18 inches in length and from 2 to 6 inches in breadth. They consist of nerves only, which form a skeleton leaf, the openings being square like lattice-work. It produces a forked spike of flowers similar to *Aponogeton*. This plant was introduced in 1855, and was successfully cultivated at Kew, producing leaves 3 feet in length.

Laurel, American. (*See* Kalmia.)

Laurel, Bay, or Sweet Bay (*Laurus nobilis*), a tree of the Laurel family (Lauraceæ), native of Southern Europe, where it attains a height of even 40 or 50 feet. It is well known in this country, but is often killed to the ground in severe winters, which circumstance keeps it down to a bushy shrub. The leaves are aromatic, and used for flavouring custards, puddings, and a few are often packed in fig boxes to give the figs a flavour. Though known as Bay Laurel it is distinct from the common shrub called Cherry Laurel (*Prunus Laurocerasus*), which belongs to the Cherry family.

Laurel, Canary (*L. canariensis*), a large tree having oblong elliptical leaves of a rusty colour, native of the Canary Islands.

Laurel, Cape of Good Hope (*L. bullata*), a small branching tree, which on account of the fetid smell of its wood is well known in the Cape Colony as Stink-wood.

Laurel, Jamaica (*L. chloroxylon*), a lofty straight tree of uniform girth, having oval, elliptical, three-nerved leaves. The wood is hard, resisting the axe; it is used for many purposes, chiefly for sugar-works and machinery, and a single tree has been known to produce a straight beam 40 feet long and 10 inches square.

Laurel, Madeira (*L. indica*), a large timber tree with broad, elliptical, smooth leaves. Its timber is mahogany-like, but coarse, and is called by the natives Vinatico. *L. foetens*, a large tree with broad shining leaves, native of Madeira, and is also found in the Canary Islands; it is called foetens on account of the fetid odour of its wood, which it retains for many years. It is also known by the name of Til.

Laurel, New Zealand (*Laurelia*¹ *Novæ-Zelandiæ*), one of the largest of the New Zealand trees, growing to a height of 150 feet and 3 to 7 feet in diameter, having buttresses at the base 15 feet thick. The wood is soft and yellow, and is much used for boat-building. The fruit is aromatic.

Another New Zealand species is *L. Kohekohe*, a fine handsome tree, with a trunk free of branches to a height of 40 feet, and a diameter of 3 feet; its wood is red and fine-grained, and makes handsome furniture.

Laurel, Tasmanian, a name given to *Anopterus glandulosa*, a small tree of the family Escalloniaceæ, having opposite leaves and pretty white flowers; native of Tasmania.

Lavender (*Lavandula vera*), a shrub of the Mint family (Labiatæ), native of the South of Europe bordering on the Mediterranean. It attains a height of 2 to 3 feet, having narrow leaves. It is much cultivated in some parts of this country, especially at Mitcham in Surrey, for the sake of its flower-spikes, which are used as a domestic perfume. From these is obtained by distillation the Oil of Lavender, which dissolved in spirits of wine forms Lavender Water. *L. Spica* and *L. stæchas*, also natives of the South of Europe, yield an oil used by artists for varnishing, etc. Red Lavender drops of the shops are made by a mixture of lavender and rosemary.

Lavender, Sea (*Statice Limonium*), a perennial herb of the Leadwort family (Plumbaginaceæ), native of the southern coasts of this country. It is also called Sea Thrift; it differs from the grass-leaved thrift (*Armeria maritima*) in its leaves being

¹ A genus of the family Monimiaceæ. (See Sassafras.)

oblong, obtuse, and smooth, and flowers, which are blue, produced in loose branched panicles.

Laver, a name for ribbon-like seaweeds, of which there are different kinds—Purple (*Porphyra vulgaris* and *P. laciniata*), Green (*Ulva latissima* and *U. compressa*), sea plants, natives of the rocky shores of this country and Europe generally. In Scotland they are called Sloak, in Ireland Slook, and in some parts they form an article of food for the poor, or dressed with lemon juice they appear on the table of the rich. They contain iodine, and are considered to be good for those suffering from scrofulous complaints.

Leadwort (*Plumbago europæa*), an erect, leafy, stemmed perennial, with axillary small blue flowers. It is the type of the Leadwort family (Plumbaginaceæ), native of Southern Europe, and introduced to this country about 300 years ago; the whole plant is acrid and blistering, and is said to be used by beggars to make artificial sores to excite pity. *P. scandens* of the West Indies is, on account of its blistering qualities, called Devil's Herb.

Leather-coat Leaf-tree, a name in the West Indies for *Coccoloba pubescens*, a small, slender, unbranched tree of the Buckwheat family (Polygonaceæ), 10 to 20 feet high, bearing alternately near its apex a few large, round, rigid, pubescent leaves. An old and conspicuous inhabitant of the hothouses of this country.

Leather-wood (*Dirca palustris*), a low bush or slender-branched shrub, native of North America; the branches are tough and leather-like, and used as thongs, etc.

Leba, a name in Fiji for *Eugenia neurocalyx*, a small tree of the Myrtle family (Myrtaceæ). Its fruit is round, ribbed, often 3 inches long and 8 in circumference, and contains five large seeds of an angular shape and crimson colour. It is a favourite with the natives for scenting cocoa-nut oil.

Leek. (*See* Onion.)

Lemon (*Citrus Limonum*), a small tree with smooth, shining, laurel-like leaves, of the Orange family (Aurantiaceæ). It is found wild in Northern India, and is supposed to have migrated westward in early times; it is recorded to have been growing in Palestine in the thirteenth century, and is supposed

to have been introduced into Italy by the Crusaders, and ultimately spread into all countries of the Mediterranean suitable to its growth; it has also been naturalised in the West Indies and Florida. The fruit is oblong, oval or ovate, the apex terminated by a small blunt knob; it is similar to that of the citron, but differs in the rind being smooth. Lemons are imported into this country from Spain and ports on the Mediterranean chiefly for their agreeable acid juice and essential oil, used for flavouring confectionery and the like, as well as for making acid drinks; citric acid is also prepared from it.

Lemon Grass (*Andropogon Schoenanthus*), a perennial tufted grass with long leaves, growing wild, as well as cultivated, in many parts of India. It yields an essential odoriferous oil used in perfumery. (*See Citronella.*)

Lemon, Wild Water. (*See Granadilla.*)

Lentil (*Lens esculenta*, better known as *Ervum lens*), a weak, pea-like, wing-leaved annual of the Bean family (Leguminosæ), cultivated in Egypt and Palestine from remote antiquity; its seeds being the Lentil of Scripture spoken of in the time of Jacob, of which the red pottage given to Esau was made. It is still cultivated in Southern Europe and many parts in the East. The meal of Lentils is very nutritious, and in this country is advertised as an invalid food under the quack names of "Ervalenta" and "Revalenta."

Lentisk Tree. (*See Mastic.*)

Leopard-wood. (*See Letter-wood.*)

Letter-wood, Snake-wood, or Leopard-wood (*Brosimum Aubletii*), a large tree of the Bread-fruit family (Artocarpaceæ), native of tropical America, and also found in Trinidad. Its beautiful mottled and streaked wood is much valued by cabinet-makers, and is used for inlaying.

Lettuce (*Lactuca sativa*), an annual plant of the Composite family (Compositæ). Its native country is unknown, but it is generally supposed to be Asia. It has been cultivated in this country for 300 years. There are several varieties, the summer or Cos Lettuce being the best. Their properties are narcotic; the

milky juice, which abounds greatly in the wild species (*L. virosa*), native of this country, resembles opium in its properties. A recent instance occurred (July 1879) of the death of a man at Liverpool—it is supposed from eating Lettuce. A *post-mortem* examination showed that death had resulted from apoplexy, which was induced from the quantity of opium contained in the Lettuce.

Lever-wood. (*See* Ironwood.)

Libidibi. (*See* Divi Divi.)

Lichen, Lichenes, names of one of the orders of the class Cryptogamia of Linnæus, of which there are about 2500 species described; the greater part of these grow on old walls, stones, rocks, and trees, or on plains and mountains. A few only are of economic importance, such as Iceland and Reindeer Moss, Orchil and Cudbear (which see).

Lignum Rhodium. (*See* Oil of Rhodium.)

Lignum Vitæ (*Guaiacum officinale*), a small tree of the Bean-caper family (Zygophyllaceæ), rising to a height of 20 to 30 feet, having a round head of stiff branches and conjugate winged leaves, the whole of a yellowish tinge, and producing clusters of pretty blue flowers like *Hepatica*. It is a native of Jamaica and other West Indian Islands and of parts of tropical America. The wood is extremely hard; although of small size, it is of great importance, and is extensively used in the dockyards, its hardness making it well suited for pulleys and the bearings of steam machinery, as well as for pestles and rulers. It contains a resin known as Gum Guaiacum, which has long been in use as a medicine, especially in rheumatic affections. Gum Guaiacum is also produced by *G. sanctum*.

Lilac, Common (*Syringa vulgaris*), a bushy erect shrub of the Olive family (Oleaceæ), native of Persia, recorded to have been introduced into this country about 300 years ago, and has become one of the most common ornamental shrubs. There are several varieties, the principal being blue and white.

Lilac, Persian (*S. persica*), native of Persia, introduced about 240 years ago. It differs from the preceding in its

branches being slender and spreading, and in the trusses of flowers being fragrant.

Lillypilly Trees, a name in Australia for the species of *Acmena*, a genus of the Myrtle family (Myrtaceæ). *A. elliptica* is a handsome tree, densely furnished with small elliptical leaves, and in its season with abundance of white flowers. The wood is hard and close-grained, but is apt to split in drying. An allied species (*A. pendula*) attains a height of 30 to 60 feet, and a circumference of 5 to 6 feet.

Lily, Lilies, names for pretty flowering plants in general, but in Botany restricted to the genus *Lilium*, the type of the Liliaceæ, of which there are many species, natives of the temperate zone of the northern hemisphere. They are showy flowering plants, favourites in gardens, represented by the White Lily (*L. candidum*), the Orange Lily (*L. bulbiferum*), Tiger Lily (*L. tigrinum*), and of recent introduction the splendid *L. auratum* native of Japan, and *L. giganteum* native of Nepal.

Lily of the Valley (*Convallaria majalis*), a perennial herb of the Lily family (Liliaceæ), native of Britain and other parts of Europe, being generally found in shady places in woods, and commonly cultivated in gardens for its pure, waxy, sweet-smelling flowers. This is not the Lily of the Valley spoken of by King Solomon. (See my *History of Bible Plants*.)

Limblee Oil, an oil obtained from the seeds of *Bergera Kœnigii*, now known as *Murraya Kœnigii*, belonging to the Orange family (Aurantiaceæ), native of India and Ceylon. The leaves are used for seasoning curries, to which they impart a peculiar flavour.

Lime Fruit (*Citrus Limetta*), a small tree of the Orange family (Aurantiaceæ). It is a native of Northern India, and, like the orange and lemon, became early introduced into the countries of the Mediterranean. It has smooth, laurel-like leaves, and fruits similar to the orange, but of an oval form, and the apex depressed, forming a hollow. From it and the fruit of the lemon is obtained the lime juice of commerce, which is highly antiscorbutic, and now forms a special article

of the stores of ships on long voyages, being a powerful antidote in cases of scurvy.

Lime Tree, also familiarly known as Linden Tree (*Tilia europæa*), belonging to the Lime Tree family (Tiliaceæ), found wild throughout Europe and parts of Northern Asia. It is a bushy-headed tree, seldom exceeding 40 to 60 feet in height. The wood is light and white, and is extensively used by carvers, musical instrument makers, and others. One of the most important parts of the Lime Tree is its bark in the North of Europe, especially in Russia, and it is extensively used for making ropes and garden mats, shiploads of which are yearly imported from Archangel. The bark of old trees is used instead of tiles for covering houses, and shoes, baskets, nets, and other articles of domestic use, are made of it. The sap of the tree, which is drawn off in the spring, yields a considerable quantity of sugar. The fruit of the Lime Tree, which is not much larger than a pea, has been found to contain a principle similar to chocolate ; this was in the time of Frederick the Great (about 1658), who took great interest in its discovery, but it was found the chocolate did not keep, which, with other causes, led to its abandonment. The Lime Tree is planted in Germany and other parts for forming avenues.

Limewort. (*See Chara.*)

Linaloa, or **Linaloe**, a Mexican wood, probably furnished by a species of *Bursera*. It is highly fragrant, and is imported into this country for the extraction of a fragrant oil used in perfumery. The wood is said to come from the highlands of Mexico, and to be brought down in pieces about the size of a railway sleeper. It is used in the country where produced for veneering small fancy articles. It has been known in Mexico for at least fifty years, and is referred to by Guibourt under the name Bois de Citron de Mexique. The name Linaloa is probably derived from Lign Aloes, in the Bible, with which, however, it has no connection.

Linden Tree. (*See Lime Tree.*)

Ling. (*See Heather ; also Chestnut, Water.*)

Linseed Oil. (*See* Flax.)

Lint, the woolly flock obtained by scraping linen.

Lion's - leaf (*Leontice Leontopetalum*), a herbaceous plant of the Barberry family (Berberideæ). It consists of a round, tuberous corm or root-stock, from the centre of which rise a few compound leaves, and the leafy flower-stalk about a foot in height, bearing yellow flowers. It is a native of Southern Europe and Syria. In Aleppo the root is pounded and used as a substitute for soap. Dioscorides speaks of it as a cure for snake-bites. At the present day the Turks employ it as an antidote against an overdose of opium. Allied to this is *Bongardia Rauwolfii*. It has a large, flat, superficial tuber, 4 to 6 inches in diameter. It is a native of the same countries as the last. The Persians roast or boil the tubers for food.

Liquidambar, the name of a gum obtained from *Liquidambar styraciflua* and *L. orientale*, trees of the family Altingiaceæ. The first is a native of North America, and the second a native of Armenia, Syria, and the southern parts of Eastern Europe. The first yields the substance called Gum Storax of commerce. The chief supply comes from ports in the Mediterranean. These gums are used in medicine and as varnishes, and are different from true storax (which see).

Liquorice (*Glycyrrhiza glabra*), a strong-rooted perennial of the Bean family (Leguminosæ), with winged, clover-like leaves. It attains a height of 2 to 3 feet, and is a native of the South of Europe, where it is extensively cultivated, as also in some parts of this country, especially about Pontefract in Yorkshire. The root contains a sweet juice, which is expressed, and is used for making the Pontefract cakes, so called. By boiling it thickens, and forms the well-known stick or Spanish liquorice, which is imported from Italy and Spain, from whence ship-loads are exported to the United States, and used for sweetening tobacco, and it is also used as a demulcent and in the preparation of lozenges. The great quantity grown is, however, indicative that some other use is made of it, the general belief being that it is used by brewers for giving an apparent body to inferior

porter. It is used in the preparation of the purgative medicine known as *Black Draught*.

Litchi, Longan, and Rambutan, the Chinese names for three fruits, produced by three species of *Nephelium*, a genus of the Soapberry family (Sapindaceæ). They consist of small trees, seldom exceeding 20 feet in height, having winged, firm leaves. The flowers are small, produced in loose bunches. 1. *Nephelium Litchi*. The Litchi is the most celebrated native fruit of China. It is nearly round, about an inch and a half in diameter the shell is tough, becoming brittle, of a chocolate-brown colour, covered all over with wart-like protuberances. When fresh it is filled with a white, almost transparent, sweet, jelly-like pulp, in which lies a rather large, shining, brown seed; the pulp is of a delicious sub-acid flavour when fresh. The Chinese dry it, when it becomes black, like a prune, and thus preserve it for use throughout the year; in this state it is frequently to be seen in the London fruit shops. The species grows freely in hothouses; before 1859 a plant 12 feet high in the Palm-house at Kew bore an abundance of fine-flavoured fruit. 2. Longan (*N. Longanum*). In general appearance this tree is similar to the Litchi, but smaller, and the fruit is also smaller, being about half an inch to an inch in diameter, quite round, nearly smooth, of a dusky brown colour. The pulp is similar to the Litchi in flavour. 3. Rambutan (*N. lappaceum*), a small tree with winged leaves similar to the preceding. The fruit is of an oval form, 2 inches in length, slightly flattened, and of a red colour, covered with long, soft, fleshy spines. It contains a pleasant acid pulp, and is as much esteemed as the pulp of the two preceding. These fruits are in general cultivation in the southern provinces of China and in the islands and countries of tropical Asia. Like most other cultivated plants, there are many varieties, their fruits varying in form, size, and flavour. 4. Dawa, a name in the Fiji Islands for the fruit of *Nephelium pinnatum*, a tree 60 feet high, forming forests in Fiji, and also found in New Hebrides, New Caledonia, and other islands. Its leaves are pinnate, and when unfolding have a brilliant red tinge, which at a distance con-

veys the idea of the trees being in bloom. Its fruit is about the size of a walnut, and contains a honey-like, glutinous, white pulp, which is esteemed by the Fijians.

Lithi, a name in Chili for *Rhus caustica*, a stiff shrub with firm oval leaves of a brownish colour, belonging to the Cashew Nut family (Anacardiaceæ). It is dreaded by the natives for its baneful effects in blistering the skin, equal to those of the Poison Oak (*Rhus toxicodendron*).

Litmus. (See Orchil.)

Liverworts, a general name for the plants comprehended under the family Hepaticæ, of the class Cryptogamia of Linnæus, now separated under two distinct families, Marchantiaceæ and Jungermanniæ. Nearly 700 species are recorded, natives of moist and shady places in most hot and temperate climates; many are epiphytal, and in some respects they may be compared to mosses. They possess no economic properties, but are highly interesting to the microscopic botanist; such, for instance, as the numerous species of the extensive genus *Jungermannia*, many of which are natives of this country. The common Liverwort (*Marchantia polymorpha*) grows in moist situations, in gardens, sometimes in pots, and even in the hothouse. Another common species is *Riccia fluitans*, which grows in pools and ditches.

Locust, Honey (*Gleditschia triacanthos*), a large thorny tree of the Bean family (Leguminosæ), native of North America, attaining a height of 60 feet. The wood is hard, and principally used for making fences, posts, etc. The stem and main branches are furnished from top to bottom with tripartite, rigid spines, 3 to 4 inches in length, presenting a most formidable barrier to the ascent of climbing animals. The pods are thin, flat, curved, and twisted, a foot or more in length; they contain numerous seeds, embedded in a sweet pulpy substance, from which a kind of sugar is extracted.

Locust Trees, a name given by early botanists in America to trees bearing pods similar to the locust tree of Palestine *Ceratonia Siliqua* (see Carob Tree). West Indian (see Cour-

baril). Locust Tree, or False Acacia (*Robinia Pseud-acacia*), a tree of the Bean family (Leguminosæ), native of North America, and has been grown in this country for more than 200 years. It attains a height of 40 or 50 feet, averaging $2\frac{1}{2}$ feet in diameter. The wood was at one time considered valuable for ship-building, but if now used, it is only for trenails. The roots smell and taste like liquorice, but are poisonous. African (*see* Nitta).

Lodh Bark, a name in India for *Symplocos racemosa*, a tree of the Storax family (Styracæ), about 20 feet high, native of several parts of India. The bark is used with munjeet for dyeing. The leaves of most species of *Symplocos* turn yellow with age. *S. tinctoria*, native of Georgia and Carolina, is used for dyeing yellow. *S. Alstonia*, a branching tree growing 10 or 12 feet high, native of New Grenada, very much resembles the Chinese tea plant, and it has been long used as a substitute for tea, and is considered to have medicinal virtues.

Logwood (*Hæmatoxylon campechianum*), a small tree of the Bean family (Leguminosæ), from 20 to 30 feet high, with winged leaves, consisting of from three to four small leaflets. It is a native of Campeachy and other parts of Central America, and has become naturalised in Jamaica and other West Indian islands. Its wood is of a deep red colour, and was early introduced for dyeing purposes, and continues to form an important article of import, especially from Jamaica.

London Pride, properly London's Pride, also known as None-so-pretty (*Saxifraga umbrosa*), a pretty, rosulate-leaved herb of the Saxifrage family (Saxifragaceæ). It is a native of this country and Ireland. It appears to have been first brought into special notice as a pretty plant by George London, who was, between the years 1681 and 1717, a celebrated nurseryman and gardener, and with his partner, Wise, held more than 100 acres of ground at Brompton, well known until recent years as Brompton Park Nursery; now occupied by the South Kensington Museum, Horticultural Society's Garden, and Albert Hall.

Longan. (*See* Litchi.)

Loquat, or Japan Medlar (*Photinia* [*Eriobotrya*] *japonica*),

a good-sized tree of the Apple family (Pomaceæ); it has large, elliptical, rough, strong-veined leaves. In Japan and China it is cultivated for its fruit, which is about the size of a small plum, produced in clusters, and has the flavour of an apple. It is cultivated in the Australian Colonies, and in France and other parts of Southern Europe, where it fruits abundantly, but is not sufficiently hardy to bear the severe winters of this country.

Lotos, an ancient Egyptian name for a plant growing in the Nile, of which the Greek historian Herodotus (B.C. 413), who visited Egypt, says—"When the river swells, great numbers of lilies, which the Egyptians call Lotos, shoot up through the water. These they cut down, and after they are dried in the sun, take out the heart of the plant, which resembles a mekon (poppy); they mould it into paste and bake as bread. They likewise eat the Lotos,¹ which is round, and equal to an apple in bigness." This is, no doubt, the *Nymphaea Lotus* of Linnæus, the white water lily of Egypt, the representative of the white water lily of this country, *Nymphaea alba* (see *Nelumbium*). It would have been well if we could have ended the history of the Lotus plant with the above; but much discussion and difference of opinion has arisen regarding the identification of the plant called Lotos by the Greek poet Homer, who flourished 400 years before Herodotus. In the ninth book of the *Odyssey* he says:—

"Nine days our fleet th' uncertain tempest bore
Far in wide ocean, and from sight of shore;
The tenth we touch'd, by various errors tost,
The Land of Lotos and the flowery coast.
We climb'd the beach, and springs of water found;
Then spread our hasty banquet on the ground.
Three men were sent, deputed from the crew,
(An Herald one), the dubious coast to view,
And learn what habitants possess'd the place.
They went, and found a hospitable race;
Not prone to ill, nor strange to foreign guest
They eat and drink, and nature gives the feast,

¹ The tuberous root.

The trees around them all their fruit produce,
Lotos the name, divine nectarious juice,
Which whoso tastes,
Insatiate riots in the sweet repasts ;
Nor other home, nor other care intends,
But quits his house, his country, and his friends."

In order to assist in the determining any unknown plant, a knowledge of its native country is of special value. Here we have a tree called Lotos, the fruit of which, to him who eats it for the first time, is so delicious as to make him wish for no other home than the Flowery Land of the Lotos tree. Homer does not inform us in what country this desirable home was situated ; but, according to commentators in ancient history, it is considered to be an island or country on the African coast, near the ancient Lesser Syrtes, situated on the coast known in modern times as Barbary, which comprehends Algeria and Tunis. Presuming that such might be the case, and that Homer's story of the Lotos tree is not all poetic fiction, and as dates no doubt then, as they do now, formed one of the principal articles of food to the inhabitants of those parts of Africa, and not being known in Greece, we may readily suppose that the three Greek sailors would eat of them, and on their return to Greece would speak of them in such terms as to say they would wish for no other home, and this saying coming to the knowledge of Homer, furnished him with the idea of the Lotos. By subsequent writers, the people of the country of the Lotos tree were called Lotophagi, and various opinions were formed as to the identity of the Lotos tree. The first worthy of notice is that of Dioscorides, a Greek physician and writer on plants, who flourished about the middle of the first century (950 years after Homer), who, in a manuscript still extant in the library at Florence, figures and describes under the name of Lotos a tree known to modern botany as *Celtis australis*, a small tree of the Elm family, common on both shores of the Mediterranean, bearing abundance of sweet berries ; and being known to the Greeks, it therefore can have no claim to be the Lotos of Homer, any

more than the following *Rhamnus Lotus*, so named by Linnæus (see Jujube), nor the *Diospyros Lotus* (see Date Plum). The Lotos is also described by some as a spiny shrub, and its fruit as possessing intoxicating properties. In an article in *Annals of Natural History* (1849) Mr. Giles Munby, who resided many years in Algeria, says that in his opinion the spiny shrub *Nitraria tridentata* is the true Lotos; that its fruit is a berry sweet to the taste, and has slightly intoxicating properties, quite sufficient to make a man forget his home while under its influence; it is a thorny shrub of the Desert, common throughout Western Asia and North Africa (see Nitre Bush). As, however, Homer describes the Lotos as a tree, we cannot accept Mr. Munby's opinion that *Nitraria* was the Lotos tree of Homer. Linnæus has further complicated the Lotus by adopting it as the name of a genus of the Bean family (Leguminosæ), consisting of herbs and small shrubs, represented in this country by the pretty clover plant Bird's-foot Trefoil (*Lotus corniculatus*), and in our greenhouses by *L. Jacobea*, a small shrub, native of Cape Verd, remarkable as being one of the few plants that have truly black flowers.

Lousy-ar-nut. (See Earth Chestnut.)

Love Apple. (See Tomato.)

Lucerne. (See Medick.)

Lung Lichen (*Sticta pulmonacea*), a broad foliaceous Lichen, growing in short grass, and called by the English peasant the Lung of the Oak. It is mucilaginous, and is sometimes used as a substitute for Iceland Moss.

Lungwort (*Pulmonaria officinalis*), a low perennial herb of the Borage family (Boraginaceæ). Its leaves are about 6 inches in length, ovate, cordate, somewhat rough, marked with white blotchy spots. These spots being likened to the disease spots on the lungs of consumptive patients, early led it to become a remedy for consumption. The soft mucilaginous nature of the leaves did much to assist in the belief that it was beneficial for that disease. But, like many other plants that had a value under the "doctrine of signatures" of the old herbalists, it is now discarded.

Lupin (*Lupinus albus*), an annual of the Bean family (Leguminosæ), which, according to history, has been cultivated in Egypt from the most remote period. It is extensively cultivated in the South of Europe for ploughing in as manure; and in Germany, and some parts of this country, the Yellow Lupin (*Lupinus luteus*) is grown for the same purpose. The seeds of both, as well as those of the Blue Lupin (*L. hirsutus*), are in the raw state highly poisonous; but when boiled the poisonous property is removed, and in Italy they are used as food.

Mabolo (*Diospyros Mabola*), now described as *D. discolor*, a tree of the Ebony family (Ebenaceæ), native of the Philippine Islands, and commonly cultivated in many islands of the East. It has also been introduced into the West Indies. It is a middle-sized tree, having large, firm, coriaceous leaves of a light colour. The fruit is like a large quince, and in some places is called Mangosteen. Its flavour is agreeable.

Macaroni and **Vermicelli**, trade-names for similar products made from a small hard-grained wheat grown in Italy.

Macaw Palm, or **Gru-Gru** (*Acrocomia fusiformis*), a tall, stout, prickly-stemmed, wing-leaved palm, native of Jamaica and other West Indian islands. The fruit is round, about the size of a small apple, and produced in bunches. The nut is hard, and contains oil, which is obtained either by crushing or grinding in a mill to a paste, and after being purified it is similar to butter of a light yellow colour. It has the odour of violets, and a sweetish taste. It is employed in the manufacture of scented toilet soap. The hard shell of the nut is ornamentally carved by the negroes, and formed into toys and trinkets. The wood of the stem is very hard, and used for many purposes. This is now found to be the same palm as the *Cocos aculeata* of *Hortus Kewensis*, named by Martius *A. sclerocarpa*.

Maccasar Oil. (See Safflower.)

Mace. (See Nutmeg.)

Madder (*Rubia tinctorum*), a strong-growing perennial of the Madder family (Rubiaceæ), native of the South of Europe and Western Asia. It is cultivated in many parts for its roots,

which yield the important red dye called Madder. An allied species (*R. cordifolia*) furnishes the Madder of India called Munjeet, and ship-loads are imported into this country. The cultivation of Madder and Munjeet is now threatened with total extinction, in consequence of the general use of the coal tar or aniline dyes.

Madia Oil (*Madia sativa*), a clammy annual of the Composite family (Compositæ), native of Chili, and cultivated in many parts of America for the sake of its seeds, which after the oil is expressed are made into oil-cake for feeding cattle.

Madroma, a name in California for a beautiful tree (*Arbutus Menziesii*) of the Heath family (Ericaceæ), native of the western coast of Mexico and California. It bears a large edible berry, and is much sought after by Mexicans and Indians. Its wood is very hard, and is used for making the wooden stirrups of the Indians.

Magnolia, the name of a genus of conspicuous trees and shrubs, the type of the family Magnoliaceæ, natives of North America, China, and Japan. Their flowers and bark have an aromatic principle, but they possess no special medicinal properties. Their large sweet-scented flowers and large green leaves give them rank as ornamental trees in the gardens and shrubberies of this country. Those native of North America are hardy, of which the following are the principal:—1. *Magnolia grandiflora*, one of the most conspicuous of trees, sometimes attaining a height of 80 feet or more. It is an evergreen, and has firm, elliptical leaves, from 8 to 10 inches long, smooth and shining on the upper surface, and of a rusty brown on the under. The flowers are of a yellowish-white colour, and stand upright, in the form of a cup 6 to 8 inches in diameter. They are highly fragrant, and are the largest flowers of any trees growing in the open air in this country. There are several varieties, some of which are not so hardy as others. One tree at Kew, more than a hundred years old, for many years growing against a wall, but now for more than thirty years standing fully exposed, has attained the height of 23 feet, and a

girth of 3 feet. 2. *Magnolia glauca*, a low, bushy, deciduous tree, called Swamp Sassafras. Its flowers are highly fragrant. It is also called Beaver Tree; the wood being soft, the beavers make their dams of it. 3. *M. macrophylla*, a large-leaved deciduous tree, rare in this country. 4. *M. acuminata*, the Cucumber tree—5. *M. tripetala*, Umbrella tree—6. *M. auriculata*—7. *M. cordata*, are, with the exception of the first, all hardy deciduous trees, of which a few years ago some fine specimens were to be seen in the Royal Botanic Gardens, Kew.

Of those natives of China, *M. conspicua*, as its name denotes, is the most conspicuous. It is called Yulan. It is deciduous, and attains a height of 40 or 50 feet, much branched, and has pure lily-like flowers, produced before the leaves expand, in such profusion that at a distance it appears one compact sheet of white. It was introduced in 1789, and one of the original plants is still growing at Kew, but now much shorn of its beauty by having been transplanted.

Maguey Fibre. (*See Aloe, American.*)

Mahaleb (*Cerasus Mahaleb*), a kind of cherry, of the Almond and Plum family (Drupaceæ), native of Southern Europe. Its wood is highly prized by cabinetmakers. The plant is cultivated near Baden for walking-sticks and fancy smoking pipes.

Maharanga, a name in India for a red dye obtained from *Onosma Emodi*, a strong-rooted perennial of the Borage family (Boraginaceæ). It is indigenous to Thibet, and may be obtained in abundance. Its roots, like alkanet, yield a brilliant red colour to oil. It is employed for staining wood a mahogany colour, and is known in the Indian bazaars by the name of Rutton Root.

Mahoe. (*See Bast, Cuba.*)

Mahogany, American (*Swietenia Mahagoni*), a large tree of the Mahogany family (Cedrelaceæ), with winged, dark-coloured, ash-like leaves, native of Jamaica and Central America. It forms an important article of trade with the Republic of British Honduras, from whence occasionally very large logs are received, sometimes measuring 20 or more feet in length, and 4 or 5 feet

thick. It is greatly used for the interior fittings of houses, furniture, railway carriages, and cabinet-work of all kinds.

Mahogany, Indian—1. *S. febrifuga*, now separated as a distinct genus under the name of *Soymida*. A large tree similar in habit to the preceding, native of India, known by the native names of Rohun and Redwood. Its wood is similar to the American mahogany, and used for similar purposes. The bark is very astringent, and a few years ago came into repute as a substitute for quinine. 2. *S. Chickrassia*, now separated as a distinct genus, under *Chickrassia*; *C. tabularis* is a tree similar to the preceding, and produces one of the woods known by the name of Chittagong wood. It is light-coloured and beautifully grained, and is in much repute by cabinetmakers. Its bark is astringent, but not bitter.

Mahogany, Native. (*See Eucalyptus.*)

Mahwah, a name in India for *Bassia latifolia*. (*See Butter Tree.*)

Maidenhair Tree (*Salisburia adiantifolia*), a remarkable tree of the Yew Family (Taxaceæ), native of Japan, where it is called Gingko, and was introduced more than a hundred years ago. It is the only deciduous tree of the family, and also differs in having broad, two-lobed leaves, with longitudinal, forked veins; and the likeness of the leaves to the maidenhair fern has led it to be called by the above name. This, with the Yew and a species from Japan, is the only member of the family that withstands the winters of this climate. Although a curious and showy summer tree, it is nevertheless not much cultivated in this country. A fine specimen, 40 feet high, may be seen growing in the Royal Gardens, Kew. The kernels of the fruit are eaten by the Japanese, and an oil is also extracted from them.

Maitrank (May Drink), a German drink made by putting young shoots of Woodruff (*Asperula odorata*) into wine.

Maize, or Indian Corn (*Zea Mays*), an annual cane-like grass, growing to a height of 4 or 5 feet, bearing a dense head of closely-packed grains the size of peas, enclosed in a sheath called the cob. It is a native of South America, and was culti-

vated there as bread corn before the conquest. Since the discovery of South America it has spread, and is now cultivated in all tropical and sub-tropical countries, forming a staple article of food. Large quantities are exported from the ports of the United States to this country, and largely used for feeding horses. Several preparations are made from the flour and sold in shops as Hominy, Oswego, and Maizena. The cane yields sugar nearly equal in quality to that of the sugar-cane, but the yield is not sufficient to pay the expense of its abstraction. The late celebrated politician and writer William Cobbett attempted to bring it into cultivation in this country, and for several years grew it extensively on his farm at Nine Elms in Surrey. It grows freely, and produces crops which in hot summers ripen; but the average of good summers is too small to secure a regular crop. The terrible disease known in Italy by the name of *pellagra* is attributed to the use of bread made of undressed maize flour. (See Glucose.)

Maizena. (See Maize.)

Maja. A name of the Ivory Nut Palm.

Malacca Cane (*Calamus Scipionum*), a wing-leaved, erect, slender, cane-stemmed palm (Palmaceæ), which when dressed is of a brown colour. These stems are sometimes mottled or clouded. It is a native of Cochin-China, Sumatra, and some of the Malayan Islands. They come to this country from Singapore, and form the much-prized Malacca walking-canes.

Malambo Bark (*Croton malambo*), a shrub of the Spurge-wort family (Euphorbiaceæ), native of Venezuela and New Grenada, growing to a height of about 4 feet, having a yellowish, somewhat corky bark, highly aromatic, like *Calamus aromaticus*. It is much valued for medicinal purposes, and is even said to have proved useful in the treatment of cholera. In the United States it is said to be largely used for mixing with ground spices. The aromatic character seems to indicate that this plant belongs to some other family than the one here given.

Male Fern (*Lastrea Filix-mas*).—It is one of our handsomest

native ferns, and common throughout the temperate regions of the northern hemisphere, its fronds, 3 to 4 feet long, rising from a short erect caudex in the form of a corona. Of all the ferns celebrated by the ancients for their medicinal virtues, the Male Fern ranks the highest, its reputation as a vermifuge having descended from the time of Dioscorides to the present, the part used being the hard woody portion of the caudex, which is either taken in the form of a powder decoction or ethereal extract. But notwithstanding its ancient celebrity and fame, acquired during the latter part of the last century, when it was discovered to form the basis of the Swiss remedy for *tænia*, the secret of which Louis XVI. purchased of Madame Mouffer for the sum of 18,000 francs, its use is gradually becoming obsolete.

Mallows.—In the English version of the Bible the Hebrew word *Malluach* has been translated Mallows: "Who cut up mallows by the bushes and juniper roots for their meat" (Job xxx. 4. 1520 B.C.) It, however, cannot be determined what plant or plants were the mallows there spoken of. In this country the word Mallows has been long a familiar name of the genus *Malva*, the type of the family *Malvaceæ*, of which there are many species widely distributed in the torrid and temperate zones. They consist chiefly of annuals and soft woody shrubs; they are mucilaginous and not unwholesome, and are in repute by old herbalists as emollients. *M. rotundifolia*, an annual, native of Britain, is very common in many countries in the northern hemisphere. In Egypt it is extensively cultivated and used as a pot-herb.

Mallow, Marsh (*Althæa officinalis*), a strong-growing perennial, native of this country. It attains a height of about three feet, and is of a hoary aspect. It is cultivated in certain districts, and is held in repute as a medicinal plant, being used chiefly in fomentations and gargles. The juice of the root is used in the preparation of cough lozenges.

Mallow Tree (*Lavatera arborea*), a single hard-stemmed shrub, assuming the character of a tree, 4 to 8 or 10 feet high, terminated by a crown of broad-lobed leaves; native of Europe,

found near the sea. It is also native of this country, chiefly on the south-western coast, and flourishes on the Bass Rock in the Firth of Forth. It is grown as a curiosity in cottage gardens. Its cultivation has been attempted for the sake of its fibre, but not with any good results, as the fibre is coarse.

Malay Apple (*Eugenia malaccensis*), a handsome, strong-growing, smooth-leaved tree of the Myrtle family (Myrtaceæ), producing a profusion of scarlet flowers from the stem and branches, which are succeeded by abundance of fruit, about the size of a small apple. The tree is common in India, Malayan Peninsula and Islands. The pulp of the fruit is said to be wholesome and agreeable. A plant in the Palm-house at Kew, 20 feet high, often produces abundance of fruit. In its native country it attains a height of 40 to 50 feet, and according to Dr. Seemann the Malay Apple is common in the Sandwich and Fijian Islands. There are two varieties, one with white flowers and the other with scarlet, which are produced in such abundance that when they begin to fall the ground is one sheet of red or white, and when intermingled look like a carpet. The natives call the tree Kavika, and they hold it in veneration; and in their imagination the Kavika tree represents all that is lovely and beautiful. The fruit is large and quince-shaped, with apple-like smell and delicate flavour, which is sufficient to justify the praise Polynesians bestow upon it. This is probably a distinct species from *E. malaccensis* of India.

Maloo, a name in India for *Bauhinia Vahlia*, a woody climber of the Bean family (Leguminosæ). It has thick woody stems 200 to 300 feet long, climbing over and interlacing the highest trees in the forests, twisting it so tightly that the tree becomes strangled and dies, the *Bauhinia* remaining as a tree. Its bark is very tough and strong, and is used for making ropes and suspension bridges. Its leaves are about a foot in diameter, in the form of two lobes joined at the edges. They are sold at bazaars for domestic purposes, and are used for making platters. Another species, *B. variegata*, is a small tree, 20 feet high, common in India, China, the Moluccas, and other islands of

the Indian Ocean, and has become naturalised in the West Indian Islands. Its leaves consist of two lobes, joined like the preceding. Its flowers are showy, of a rosy white, and produced in twos on a short stalk. The wood is of a dark colour, and is sometimes called Ebony. In India its bark is used medicinally, and also for tanning leather.

Malt, barley grains moistened to make them sprout, which at a certain point is suddenly checked by tossing the grains with shovels on heated floors till dry; the grain is then sweet, the sprouting having set free the sugar; the malt then undergoes certain processes for making ale, beer, porter, gin, and whisky.

Mamme Apple (*Mammea americana*), a tree of the Gomboge family (Guttiferæ), native of the West Indies and tropical America. It attains a height of 60 to 70 feet, and has a spreading head, with broad, ovate, oblong, firm, smooth, shining leaves. The fruit is of an angular form, the size of a small melon or cocoa-nut. It has two rinds—the outer leathery; and inner thin, yellow, adhering closely to the flesh, which is firm, bright yellow, has a singularly pleasant taste, and a sweet aromatic smell. It is, however, variously thought of. Some consider it of a soapy flavour, others that it tastes like molasses, with a slight flavour of tar. It is more agreeable to the palate of the natives than to Europeans. It contains one to four large seeds, from which an oil is expressed, used by the Indians as a hair oil. The tree on being wounded yields a thick yellow gum. It is also used by the Indians and negroes as a cure for the itch, and to prevent the chigoes from attacking their feet. The bark is a powerful astringent, even poisonous, and a decoction of it is used for the same purposes.

Mammoth Tree (*Sequoia gigantea*), more generally known as *Wellingtonia gigantea*, a tree of the Coniferæ family. This was supposed by some authors to be a distinct genus from *Sequoia*, and on account of its large size English botanists named it after the great warrior the Duke of Wellington, thus giving it the name of *Wellingtonia gigantea*. Careful examination has, however, shown me that it is in no way distinct as a genus from

Sequoia, in which genus it is now placed. It is a native of California, and for some time was thought only to grow in one locality, called the "Mammoth Grove;" it has, however, been found in several other mountain ranges, but not equal in size to those first discovered. Its immense size was a few years ago well known to visitors to the Crystal Palace by a portion of the thick bark of one of the trees being set up in the position it occupied when growing, showing its natural dimensions, the height of the tree felled being 327 feet, with a diameter of 30 feet at the ground. This bark was destroyed by a fire which occurred at the Palace some years since. The plant has been introduced, and grows freely in this country, forming as yet a very ornamental tree, some having attained already the height of 30 feet or more.

Manchineal Tree (*Hippomane Mancinella*), a tree of the Spurgewort family (Euphorbiaceæ). This, like the Upas tree of the East, is the celebrated poison tree of tropical America; it grows to the height of from 40 to 50 feet, and is generally found near the sea-shore. The leaves are simple, of an elliptical form, and shining, 3 to 4 inches in length. The fruit is of a yellowish-green colour, and very tempting to the eye, but when bitten it is found to be very acrid. Many wonderful stories are told of the virulent nature of this tree, even that it causes ill effects to persons lying under its shade; its milky juice is highly acrid and blistering to the skin, and has caused blindness by the hands coming in contact with the eyes after the plant has been handled.

Mandiocca. (See Cassava.)

Mandrake (*Mandragora officinarum*), a low perennial herb of the Nightshade family (Solanaceæ), native of the South and East of Europe and Western Asia; it has large tap roots, from which spring a number of simple lance-shaped leaves, the flowers being produced amongst them close to the stem, and succeeded by the fruit, which lies on the ground round the centre of the plant; it is like the potato apple, but larger. This plant is of ancient renown, for virtues superstitiously founded on the

resemblance of the roots to the human figure. This idea of its virtues has prevailed since Reuben "found mandrakes in the field," but it is doubtful whether that was the same plant as the present. A few years ago two children were poisoned, it is said, by eating mandrake roots, which they found in a field. But whatever was the cause of death, it could not be from the effects of *Mandragora officinarum*, as it is not a native of this country.

Mangel Wurzel. (*See Beet.*)

Mango (*Mangifera indica*).—This well-known tree belongs to the Cashew Nut family (Anacardiaceæ), common throughout the whole of India and other countries of the East, and has been introduced into the West Indies and tropical America. It may well be called the Apple of the tropics; and, like it, it has a great many varieties, differing in the shape, size, colour, and flavour of the fruit; some are large, fleshy, and luscious, while others are so stringy and terebinthaceous that they have been compared to a mouthful of tow soaked in turpentine. They vary in form, some being kidney-shaped, and some roundish and slightly compressed; their average weight is from a quarter to three-quarters of a pound. Some years ago fine luscious fruits, each weighing half a pound, were produced on an old tree in the Palm-house at Kew.

Mangosteen (*Garcinia Mangostana*), a tree of the Gamboge family (Guttiferæ), attaining a height of about 20 feet, with opposite nearly horizontal branches and smooth elliptical opposite leaves, native of Molucca and other Spice islands; and it has become indigenous in Java, Singapore, and other parts of the East. The fruit is about the size of an apple, of a reddish-brown colour when ripe, having a thick succulent rind, and crowned with the persistent rays of the stigma. It contains a juicy white pulp of a refreshing, delicate, sweet, and acid flavour. It is universally esteemed, and is considered to be one of the finest of tropical fruits. The rind contains an astringent juice, used as a cure for dysentery.

Mangrove, a name applied to two genera of shrubs or small

trees, namely *Rhizophora* and *Avicennia*. 1. *Rhizophora*, the type of the Mangrove family (Rhizophoraceæ); consists of about 20 species, all being natives within or near the tropics, where they form impenetrable barriers for hundreds of miles along the mud-shores of low coasts, rising to a height of 15 feet or more, and throwing out numerous roots from the lower part of the stem. They also send down long slender roots from the branches, something like the banyan tree of India. The Mangrove is perhaps most remarkable from the fact of its seeds germinating in the fruit while yet hanging from the branch, and producing a radicle or root sometimes more than 3 or 4 feet long, and ultimately falling into the mud and forming a new centre. By this means they extend their domain seawards, their roots and branches interlacing in every direction. Oysters and other shell-fish attach themselves to these plants, so verifying to a certain extent the assertion that oysters grew on trees. The Mangrove has no special virtues, except that the bark is sometimes used for tanning and dyeing. The exhalations from Mangrove swamps are of a most unhealthy nature, causing malaria and fever. The typical species of the family is *Rhizophora Mangle*.

2. *Avicennia tomentosa*, a shrub of the Verbenaceæ. Like the preceding, it occupies large tracts of the sea-shores in tropical countries, and extends south to New Zealand and Tasmania. It is, like the true Mangrove, remarkable for extending its domains seawards by strong roots, which rise out of the mud in an arched, entangled manner, again entering the mud and sending up asparagus-like shoots, forming extensive, impenetrable coast jungles. On the American coasts, these jungles are the resort and home of alligators. It has opposite, entire, oblong leaves, 2 to 3 inches in length, with a white down on the under surface, which has caused it to be called the White Mangrove.

Manilla Tamarind. (*See* Algaroba.)

Manna, a sweet substance produced by different plants, the most important being the Manna Ash (*Fraxinus Ornus*), a tree attaining a height of 30 to 40 feet, common in Southern

Europe. It contains a sweet juice, which is obtained by making incisions in the stem. The juice hardens, and forms the principal kind of Manna sold by druggists for domestic use; the principal quantity comes from Sicily and Calabria. Another kind of Manna is produced by *Eucalyptus mannifera*, a lofty tree of the Myrtle family (Myrtaceæ), native of New South Wales, also by a species of Oak (see Willow). A kind of Manna is produced by the Larch tree (*Larix europæa*), known as Manna of Briançon.

Manna Croup. (*See* Manna Grass.)

Manna Grass (*Glyceria fluitans*), a spreading water-grass covering the surface of water in ditches, pools, ponds, etc., in this country, and throughout Europe. It is a sweet grass; cattle are fond of it, and wade into the water to obtain it. In Holland and Poland the seeds are used as food, and in Germany are used for making the article called Manna Croup.

Manna of Sinai is produced by two plants. *Tamarix mannifera*, a small tree or much-branched shrub similar to *T. gallica*, common on the coasts of this country, France, and Southern Europe generally. It is native of the desert countries of Western Asia. At certain seasons of the year the stems are punctured by a small insect; from these punctures a honey-like liquid exudes, which hardens on the stems, and is collected by the Bedouin Arabs of the present day, and is preserved like honey as a delicacy. Another kind of Manna is produced by *Hedysarum Alhagi*, by modern botanists called *Alhagi maurorum*, a low scrubby spiny bush of the Bean family (Leguminosæ), with small simple leaves. A plant common in the deserts of Syria, Persia, Bokhara, and Hindostan. In some places it is called Camel Thorn. During the heat of the day a sweet gummy substance exudes from the leaves and stems; this hardens, and is collected by the Bedouin Arabs, and in Bokhara to such an extent as to form a substitute for sugar, for which it is used as well as for sweetmeats and confectionery. Some writers endeavour to show that this and the preceding furnished the Manna of the Israelites, but the quantity obtained even over an extensive district is small, and in other points it does not

agree with Moses' description of the Manna; with regard to which some writers have endeavoured to explain that the miraculous fall of the Manna of the Israelites was due to natural causes, and believe it to have been showers of a Cryptogamic plant (*Lichen esculentus*), called by modern botanists *Lecanora esculenta*, first brought into notice by Pallas, a Russian traveller, in 1788, who observed it in the Crimea, and also on very dry limestone hills in the desert of Tartary, lying on the ground like small stones united together. The use made of it by the inhabitants for food in times of scarcity led him to name it *Lichen esculentus*, and he described and figured it in a Russian botanical work in 1796. The species now in question, and a closely-allied species (*Lecanora affinis*), occupy vast tracts of barren plains and mountains in many regions of Western Asia, and also of North Africa; in time it loses its attachment to the surface on which it grows, and being light is carried up by the winds and conveyed in the air to a great distance, ultimately falling to the ground, and sometimes forming a layer several inches in thickness. Sheep eat it, and in times of scarcity the inhabitants make a kind of bread of it, regarding it as sent to them by Providence, and believing that it falls from heaven. Specimens collected after a shower are to be seen in the Museum at Kew, sent by W. K. Loftus, Esq., in 1854; also specimens from Bayaza, in Asiatic Turkey, sent in 1855 by H. H. Calvert, Esq., British Consul at Erzeroum. On the 3d of August 1828 a shower is recorded to have fallen in the region of Mount Ararat in Armenia. The same, or a closely-allied species of lichen, has been observed by the Rev. H. B. Tristram in the great desert of Sahara, lying on the ground like nodules of sand; it is gathered by the natives, and used by them as food in times of scarcity.

The late Giles Munby, Esq., who resided for a number of years in Algeria, also gives an account of it in a paper read before the British Association at Birmingham in 1849. He says that *L. esculenta*, or an allied species, springs up in a night, covering the sand of the desert; and that the French soldiers during an expedition south of Constantine subsisted on it for some days,

cooking it in various ways, and making it into bread. He further states that it is blown about by the wind, and collects in heaps. Being of a soft starchy nature, it can readily be imagined that it would soon ferment and putrefy.

These accounts seem to leave no doubt that one or more species of crustaceous edible lichens grow on sterile plains and mountains, and are occasionally carried by winds to distant localities; that the latter circumstance seems to be uncertain and erratic; and also that these lichens do not agree with the text which says, "When the sun waxed hot, it [the manna] melted," which being the case with the *Tamarix Manna* leads us to presume that it and *Lichen Mannas* are included in Moses' description of Manna.

Maple, Common (*Acer campestre*), a tree of the natural order Sapindaceæ, native of this country. It is valued for its wood, which is first white, and by age becomes yellow or brown. It is compact and firm, but not hard, of a fine grain, and is employed for turnery, ornamental work, and wood-carving, and was once in great repute for culinary vessels, as bowls, plates, spoons, etc.

Maple, Sugar (*A. saccharinum*), a moderate-sized tree, native of North America, in Canada forming extensive forests. It is of great importance for its juice, which is obtained in early spring by tapping, and is afterwards converted into sugar. A tree will yield from two to four pounds yearly, and will continue to do so for forty years without suffering injury. It is chiefly made by the Indians, and is in general use in North America, and is considered equal to cane sugar.

Marble-wood, Andaman (*Diospyros Kurzii*), a tree of the Ebony family (Ebenaceæ), native of the Andaman Islands and British Burmah, attaining a height of 50 to 60 feet; its wood is greyish, interlaid with black, and called Marble-wood. It takes a fine polish, and is used for cabinet-work in the country of its growth.

Marigold (*Calendula officinalis*), a pretty yellow flowering annual of the Composite family (Compositæ), native of South

Europe, introduced more than 300 years ago, and become naturalised in many parts, often seen on railway banks. An extract of the flowers is used for colouring butter and cheese.

Marigold, Marsh (*Caltha palustris*), a beautiful perennial plant of the Ranunculaceæ, flowering early in the spring, growing abundantly in marshy places and by river-banks; it is commonly reputed to be acrid and poisonous; the flower-buds have been used as capers. In some places it is called Buttercup.

Marjoram (*Origanum vulgare*), a strong-growing perennial plant of the Mint family (Labiatae), native of this country, known by the name of Wild Marjoram. Oil of Thyme is obtained from it, and is used by dentists and furriers.

Marjoram, Sweet (*Origanum Marjorana*), **Pot** (*O. Onites*), **Winter** (*O. heracleoticum*), perennial plants, native of South Europe, and cultivated in this country as pot-herbs.

Marking Nut (*Semecarpus Anacardium*), a tree of the Cashew Nut family (Anacardiaceæ), native of India. It has large oblong leaves, and fruit borne on a fleshy receptacle similar to the Cashew Nut. It is roasted and eaten by the natives. The black juice obtained from the unripe fruit is used for marking cloths, and when mixed with quicklime forms an indelible marking-ink. Great care is necessary in using it, as from its acrid nature it is apt to cause severe inflammation. It is also used as a varnish in calking ships.

Marmalade Plum, a name in the West Indies for *Lucuma mammosum*, a tree of the Star Apple family (Sapotaceæ), common throughout the West Indies and tropical America, valued for its fruit, which is from 3 to 5 inches long, and pulpy. It is called Marmalade from its resembling that preserve in taste and appearance.

Marmelos (*Ægle Marmelos*). (See Bael.)

Marram, Marrum, or Mat Grass (*Ammophila arenaria*); also may be included under this name *Elymus arenaria* and *E. geniculatus*, all perennial, strong, running-rooted grasses, having rigid whitish leaves. Natives of the sea-shores of this country

and other parts of Europe. On low sandy shores they form important agents in keeping back the inroads of the sea, and they even extend seaward. The celebrated golf links of St. Andrews have thus been gained from the sea, and people now walk on ground that was sea not fifty years ago.

Marvel of Peru (*Mirabilis Jalapa*), a strong-growing perennial of the Marvel of Peru family (Nyctaginaceæ). It has been grown in this country as a garden plant for more than 250 years. It is said to be a native of both Indies, but this must be considered uncertain. It has large black tuberous roots, supposed at one time to be the medical Jalap Root. This and *M. longiflora* are handsome garden plants, opening their pretty tube-like flowers, or properly calyx, in the afternoon, hence called Four-o'clock-flower.

Massaranduba. (*See Cow Tree.*)

Mastich, the name of the resin of *Pistacia Lentiscus*, a tree of the Cashew Nut family (Anacardiaceæ). It attains a height of 15 to 20 feet and a foot in diameter, having winged smooth leaves of a pale colour, and inconspicuous flowers. It yields a balsamic sap, which is obtained by making incisions in the stems and branches; it hardens, and is the Mastic of commerce. It has a sweet resinous smell, and is chewed by the Turks to preserve the gums and teeth, and to sweeten the breath, and it is also used by them in the preparation of a liqueur called Raki. It is used by dentists in this country for stopping teeth. In the arts it is chiefly employed as a varnish for pictures, maps, etc., on paper and canvas. About eight or ten tons are yearly imported, chiefly from Scio and other Greek islands. It is common in the rocky countries of Gilead, and is supposed to have yielded the balm that the Ishmeelites carried into Egypt. The resin of the Lentisk was called by the ancients *Schinos*, which has been adopted by Linnæus as the name of a genus of American shrubs of the same family (Anacardiaceæ). *Schinus Molle*, a shrub, native of Peru, is called the Peruvian Mastich Tree. It has light-green pinnate leaves, which contain a highly odoriferous oily fluid, which naturally exudes, especially after rain, and fills

the air with fragrance ; on throwing fragments of the leaves into water the oil is expelled with such force as to cause them to jerk and twirl as if by spontaneous motion. *S. Molle* is widely diffused. It is found extending from Chili northward to California, where it is called the Pepper Tree, its berries having the taste of common black pepper. It has been introduced and is now common in Italy and other parts of South Europe ; but neither it nor the Lentisk is sufficiently hardy to live in the open air in this country.

Mat Grass. (*See* Marram.)

Mats.—Cocoa-nut (*see* Cocoa-nut) ; Chinese and Indian (*see* *Cyperus*) ; Garden or Russian (*see* Lime Tree) ; Door (*see* Hemp).

Matè. (*See* Paraguay Tea.)

Matico (*Piper angustifolium*), better known as *Artanthe elongata*, a jointed shrub of the Pepper family (Piperaceæ), native of Peru. It is an erect-growing species with lanceolate rough leaves, which are used for stanching the bleeding of wounds. It is known in South America by the name of Soldier's Herb.

Mawseed. (*See* Poppy, White.)

May, a popular name for the flowers of *Cratægus Oxyacantha*. (*See* Hawthorn.)

May Apple (*Podophyllum peltatum*), also known by the name of Duck's - foot, a perennial plant of the Buttercup family (Ranunculaceæ), native of the United States ; abundant in damp, shady woods. It has long, shield-like, lobed leaves and white flowers ; its fruit is egg-shaped in form, and about the size of a small lemon ; the root and leaves of the plant are acrid and poisonous, but the pulp of the fruit is less so, and contains active medicinal qualities, being in repute as a substitute for calomel.

Meadow Saffron. (*See* Colchicum.)

Medick, also called **Lucerne** (*Medicago sativa*), a perennial, tall, slender, clover-like plant, considered to be a native of England, but rare in a wild state. It is, however, extensively cultivated as a cattle food. The Hop Medick (*M. Lupulina*), so

named on account of its flowers having some resemblance to a hop cone, is also cultivated for fodder.

Medlar (*Mespilus germanica*), a small spreading tree or bush of the Apple family (Pomaceæ). It is found in hedges and uncultivated places in this country, as well as in France, Germany, and Southern Europe. The fruit is about the size of a very small apple, having the lobes of the calyx well developed and permanent on its apex. It is unfit for eating until it loses its green colour and begins to decay, when it acquires an agreeable acid somewhat astringent flavour.

Medlar, Neapolitan (*Crataegus azarolus*), a bush or small tree of the Apple family (Pomaceæ), native of Southern Europe and Palestine. The fruit is pulpy and somewhat acid, and frequently forms a table-fruit.

Melegueta Pepper. (*See* Grains of Paradise.)

Melilot (*Melilotus officinalis*), a clover-like annual or biennial of the Bean family (Leguminosæ), widely cultivated throughout Europe and Western Asia as food for cattle. In Switzerland the leaves are made into powder, which is used for flavouring Chapziger cheese. (*See* also Coumarin.)

Melon (*Cucumis Melo*), a tendril climbing or trailing annual of the Gourd family (Cucurbitaceæ). Its well-known fruit is of ancient fame, having been cultivated in Egypt in the time of Moses, and is now a favourite in most warm countries. There are many varieties; the finest are said to be the melons of Bokhara. It is supposed to have been first introduced from Egypt to Rome, from thence to France in 1495, and afterwards to England, where it is too tender for open air, but is successfully cultivated under glass.

Melon Thistle, the name early given to *Melocactus communis*, one of the Cactus family (Cactaceæ), native of the coasts of most of the West Indian islands and some parts of the American continent, growing on rocks and barren places. The plant consists of a globose, somewhat conical, succulent fleshy stem, a foot or more in diameter, and 1½ feet high, with twelve to twenty prominent ridges bearing at regular distances tufts of strong

spines; the flowering portion being of a cylindrical form produced on the top of the plant, consisting of a dense mass of bristly hairs and slender spines, out of which the small flowers scarcely emerge. This head is 2 to 3 inches in diameter, is permanent, and increases in height to 6 or more inches, and being of a red colour, it is compared to a Turk's cap.

Mesquit Tree. (*See* Algaroba.)

Miel de Palma. (*See* Coquito Nut.)

Mignonette (*Reseda odorata*), the type of the Mignonette family (*Resedaceæ*), native of Egypt and the shores of the Mediterranean. In Pliny's time the Romans applied this plant under the name of *Reseda* as a charm to allay the irritation of wounds. It is recorded to have been introduced and cultivated in the Apothecaries' Botanic Garden, Chelsea, in 1752. Since then its sweet smell has made it a universal favourite with all classes. In this country it is an annual, but in the south of Europe it becomes shrubby.

Mignonette, Jamaica. (*See* Camphire.)

Mildew. (*See* Fungi and Mucor.)

Millet.—There are several Millet grasses, the most important being *Sorghum vulgare*, an annual, cane-like, corn-grass, similar to Indian corn, but not so strong in growth, producing a dense head of spikelets, bearing numerous small corn-grains, which formed an extensive article of food in ancient times, as it does at the present day. It is extensively cultivated in Southern Europe and region of the Mediterranean generally, including Egypt, Syria, and eastward to India, also coast of Guinea, and other parts of Western tropical Africa. It grows freely in this country, but the summer heat is not sufficient to bring the corn to perfection. On the removal of the grains the spikes become hard and rigid, and are imported into this country for making carpet and small hand-brooms. In my *History of Bible Plants* I have endeavoured to show that the stalk of this was probably the reed of St. Matthew, and the spikelets on its top hyssop of St. John mentioned at the Crucifixion (*see* Hyssop). In Germany and other parts of Southern Europe *Panicum italicum*

and *P. miliaceum*, two strong annual grasses, are cultivated under the name of Millet; they produce a dense cylindrical head of small grains, which are chiefly used for feeding poultry. Several others of the *Panicum* group, as also *Eleusine coracana*, a decumbent grass, are cultivated in various warm countries, and called Millet.

Millet Khoda, a name in India for the grains of *Paspalum scrobiculatum*, cultivated as a kind of Millet.

Mint. (See Peppermint, also Spearmint.)

Mio Mio, a name in the Argentine Republic, Banda Oriental, and Uruguay, for *Baccharis cordifolia*, a shrub of the Composite family (Compositæ). It grows in pastures, and is poisonous to sheep.

Mirabel, a French name for candied or preserved plums.

Miriti or **Ita Palm** the Indian name for *Mauritia flexuosa*, native of the swamps of the Orinoco. It is also stated to be found at the sources of the Orinoco, at an elevation of 4263 feet. It is a magnificent palm, its cylindrical stems rising like Grecian columns to a height of 100 or 150 feet, terminated by a crown of large fan-shaped leaves, from the base of which is produced a big bunch of pendulous fruits, some measuring 8 to 10 feet in length, weighing 2 or 3 cwts., and containing several bushels of fruit. Each fruit is about the size of a small apple, having a reticulated, polished, smooth shell. The Guarane tribe of Indians, during the period of the inundations by the Orinoco, suspend their dwellings from the stems of this palm. These dwellings consist of a floor made of its leaves, on one part of which they place a little earth whereon to make their fire. Its shelly fruit, its farinaceous pith (sago), and its juice abounding in saccharine matter, and the fibres of its petioles, furnish them with food, wine, and thread for making cord and weaving hammocks.

“ Wide o’er his isles, the branching Oronoque
Rolls a brown deluge ; and the native drives
To dwell aloft on life-sufficing trees ;
At once his dome, his robe, his food, and arms.”

THOMSON.

The same materials are also furnished by an allied species, *M. vinifera*, the thin pulp of the fruit of which is edible, having a sweet slightly-acid taste, and a kind of wine is made from it.

Mishmee, a name in India for *Coptis teeta*, a creeping-rooted, three-leaved, low plant of the Buttercup family (Ranunculaceæ), native of Assam. It is sold in bazaars as a bitter tonic.

Missel, a name in Guiana for the fruit of *Blakea quin-quinervia*, a moderate-sized tree of the Melastome family (Melastomaceæ), native of the forests of Guiana. Its fruit is a six-celled berry seated in a permanent bell-shaped calyx of a yellow colour, and its flavour may be compared to raspberry cream.

Mistletoe (*Viscum album*), a parasitical evergreen shrub of the Mistletoe family (Loranthaceæ), common in Middle and Southern Europe, growing on various kinds of trees. It has been said that Mistletoe never grows on the oak; there are, however, many recorded instances. In this country the apple tree is its favourite, the trees in the orchards of Herefordshire and neighbouring counties being loaded with it. Much has been written respecting the Mistletoe, both as regards its parasitical mode of growth and structure, and also in relation to its ancient fame. History tells us it was held sacred in the religious ceremonies of the Druids. The very general custom of placing twigs and branches of Mistletoe in our houses at Christmas is probably a relic of its pagan sanctity, though now retained merely as an emblem of social friendship and jovial custom that has long characterised that festive season. To supply this simple emblem many tons of Mistletoe are required for London alone; and it appears that the home produce is not equal to the demand, it being extensively imported from France, chiefly from Normandy. In December 1880 the quantity was above 2300 crates, each crate weighing 1 cwt.; of which 160 crates were sent to Liverpool, 100 to Manchester, 40 to Glasgow, and various quantities to other places. In the early part of the month of December the price of a crate averages from 4s. 6d. to 5s., but as Christmas approaches, the price advances to 8s., 12s.,

and even 20s. Its berries are said to be poisonous, instances of death to children having occurred from eating them; but this appears to be owing more to the glutinous nature causing them to adhere to the coats of the stomach than to any active principle.

Mocan (*Vismia Mocanera*), an evergreen shrub with tea-like leaves belonging to the Tea family (*Ternstroemiaceæ*), native of the Canaries. Some writers suppose its fruit to be the Mocan of the Guanches, the original inhabitants of the Canaries and Madeira, but long ago extinct. Its fruit, however, being a dry capsule, leads us to doubt whether the Mocan was the plant now known as *Vismia*.

Model-wood, a name given in India to the hard light-coloured wood of *Adina* (*Nauclea cordifolia*).

Molle, a Peruvian name for *Schinus Molle* (see Mastich).

Monk's Hood. (See Aconite.)

Monkey-bread. (See Baobab.)

Monkey-pot. (See Sapucaia.)

Monstera, the name of a genus of the Arum family (*Aroideæ*). *M. deliciosa* is an epiphytal climber, native of Mexico. Its stems are about an inch in diameter, extending to a great length, and furnished with large, cordate, lobed leaves, perforated with holes. The fruit is about the size of a small pine-apple, pulpy, of a pink colour and most delicious flavour. It grows and fruits freely in the hothouses of this country.

Moon-flower (*Ipomœa bona-nox*), a climbing annual of the Bindweed family (*Convolvulaceæ*), native of India. It has large flowers, 5 to 6 inches in diameter, of a pure white, which, in consequence of their habit of opening during the night, are very conspicuous. The name Bona-nox means Good-night Plant, in allusion to its nocturnal flowers. It is represented in this country by the common Bindweed (*Convolvulus* [*Calystegia*] *sepium*), which climbs over bushes and hedges, its white flowers being very conspicuous in the dark.

Mora Tree (*Mora excelsa*), a large tree of the Bean family (*Leguminosæ*), with glossy winged leaves, attaining a height of

100 to 150 feet. It is a native of Guiana, and of late years extensive forests of it have been found in Trinidad. Its timber is imported for shipbuilding, and is considered more durable than oak. The pods are from 6 to 8 inches in length and 3 inches in breadth, containing a single large kidney-shaped seed, which nearly fills the pod. The genus *Mora* is now sunk under that of *Dimorphandra*.

Morell (*Morehella esculenta*), a fleshy fungus of the Mushroom alliance, native of this country and Central Europe generally. It grows in woods and pastures, especially where wood has been burnt; consequently the peasants in some parts of Germany have at times burned down extensive tracts of woodlands for the purpose of making the soil more productive of Morells. The Morell grows to a height of from 3 to 4 inches; it consists of a smooth white cylindrical stem, having a hollow spherical cap adhering to the stem by its base; it is of a pale brown or grey colour, and is marked with deep pits all over its surface. It is highly esteemed for giving a delicious flavour to dishes similar to that of mushroom ketchup. In consequence of its being somewhat rare and expensive in this country, a substitute is found in the allied genus *Helvella*. *H. crispa* and *H. lacunosa* are similar to the Morell, and are common in woods and on banks.

Morinda Bark.—*Morinda tinctoria*, *M. citrifolia*, and *M. umbellata*, shrubs or small trees of the Cinchona family (Cinchonaceæ), very common throughout tropical Asia, including the Polynesian Islands. Their bark and roots are extensively used for dyeing, the bark producing a red, and the roots a yellow dye; but by different mordants other colours are produced, even green. In India *M. tinctoria* is called Ach, and is used for dyeing turbans and red cloths. In Tahiti the species are called Mona or Monii, and are used for the same purposes. In Singapore and Philippine Islands the leaves are held in high repute for ulcers and wounds, and the stems are used for props for the pepper vine.

Moss, a general term for the plants comprehended under the

order *Musci*, of the class Cryptogameæ of Linnæus, of which about 1000 species are known to botanists. They have a wide geographical range, but are most abundant in the temperate zones and on the elevated regions within the tropics, and a few within the Arctic zone. In Northern Europe the genus *Sphagnum* occupies extensive tracts of boggy country, and by its successive growth and decay in the course of ages becomes peat, which forms the common fuel of the North. Above 300 species are native of this country, of which some are common to all situations, growing on lawns, trees, old walls, and in shady woods. A few are peculiar in their places of growth, such as *Schistostegia osmundacea* ornamenting caverns with its luminous golden hue, while *Cinclidotus fontinaloides* and *Fontinalis antipyretica* grow upon rocks, stones, or woodwork in running streams. As a whole, they possess no important economic properties. Some species of *Sphagnum*, and several species of *Hypnum*, are used for stuffing cushions and for packing, and small fancy brooms are made of *Polytrichum commune*. They are, however, highly interesting to study, and many books have been written respecting them.

Moss, American or New Orleans (*Tillandsia usneoides*), a small epiphytal plant of the Pine Apple family (Bromeliaceæ), native of tropical and sub-tropical America, growing in profusion on the cypress trees in the regions of the Mississippi. In Jamaica it is called Old Man's Beard. It has slender leaves, 4 to 6 inches long, which, after being subjected to dressing, are used as a substitute for horsehair, and imported into this country.

Moss, Ceylon. (*See* Ceylon Moss.)

Mother Cloves, a trade name for the young fruits of the Clove tree. (*See* Clove.)

Moulds. (*See* Fungi and Mucor.)

Mowana. (*See* Baobab.)

Moxa, a name applied to several substances used for producing a blister by slow combustion, such as Amadou (*Polyporus fomentarius*) and *Artemisia chinensis*, the latter a

plant of the Composite family (Compositæ). It is a native of China. The blister is produced by burning small pellets of the dried plant on the skin.

Mucherus, a name in India for a gummy substance obtained from the bark of *Bombax malabaricum*, a tall tree of the Silk Cotton family (Bombaceæ). It is sold in the bazaars as a medicine.

Mucor, the name of a typical genus of a host of cryptogamic plants of the Fungus family, familiarly known as Moulds and Mildews. The microscope shows them to consist of variously-formed cells, successively producing their like, forming chain-like filaments, generally uniting, becoming a white and woolly-like web, which rapidly spreads to the stems, leaves, and fruits of plants, even entering and penetrating their substances, causing great destruction to field and garden crops. The most important of these destructive fungi are noticed under Potato, Vine, Wheat, Coffee, and Turnip (which see; also see Fungi).

Mudar and **Yercum**, names in different parts of India for *Calotropis gigantea*, a tree of the Swallowwort family (Asclepiadaceæ), attaining a height of 10 to 20 feet. Its stem and branches are covered with a fibrous, corky, soft bark; its leaves are opposite, about 6 inches in length. Its fruit is full of fine silky hairs; and the whole tree abounds in milky sap. The inner bark consists of fibre, equal to that of hemp in firmness and strength. The tree is common throughout India, as is also an allied species (*C. procera*), which extends throughout Western Asia and Eastern Africa, abundant in the valley of the Dead Sea. Its milky sap contains caoutchouc, but not in sufficient quantity to repay the cost of its extraction.

Mukita. (See Gingerbread Plum.)

Mulberry Tree (*Morus nigra*), of the family Moraceæ. The common black Mulberry is believed to be a native of Western Asia, and early spread throughout Southern Europe and Northern Africa. It appears to have been introduced into this country more than 300 years ago, but the climate not being favourable for the production of silk, it is chiefly valued for its fruit, which consists of a number of one-seeded ovaries connected together

by their enlarged pulpy calyces. The White Mulberry (*Morus alba*), said to be a native of China, was early introduced into Europe, and has now almost superseded *M. nigra* for the feeding of silkworms.

Mullein, Great (*Verbascum Thapsus*), a biennial of the Figwort family (Scrophulariaceæ), native of this country, generally found growing in neglected places in old gardens. In favourable soil it attains a height of 4 to 5 feet, furnished with broad elliptical densely woolly leaves, the upper part being closely occupied by yellow flowers. It has long been famed as a domestic medicine, and in consequence of its being used in pulmonary complaints in cattle, it has received the name of Bullock's Lungwort. The dry stalks and leaves were in ancient times dipped in grease and used as a substitute for candles and lamp-wicks. In this country it is called High or Hag taper, on account of the superstition that it was used by witches of old. In Scotland it is known by the name of Shepherd's Club. It is also known by the name of Adam's Flannel and Aaron's Rod, which are merely fanciful names.

Munjeeth. (*See* Madder.)

Muscatel. (*See* Raisins.)

Mushroom (*Agaricus campestris*).—This edible fungus is so well known that it is not necessary to describe it. It is found abundantly in summer and autumn in pastures; but for the supply of London and other large towns it is extensively cultivated in covered beds, and it is also largely grown in the catacombs in Paris, forming an important article of food. Mushrooms are propagated by what is called spawn, which consists of horse and cow dung made up into the form of bricks or cakes, which are put, for a short time, in a warm place, mixed with some of the material of the old mushroom beds, containing more or less of the mycelium or roots of mushrooms. These are white and thread-like, and on coming in contact with the new material, the whole mass becomes impregnated with the white threads. The bricks and cakes are then stored for use, and enev form an article of trade, and are familiarly known as mushroom

spawn. On new beds being made, portions of these bricks are mixed with the soil of which the beds are formed, and in time a crop of mushrooms is the result. The Horse Mushroom (*A. arvensis*) is similar to the above, but of a much larger size, some specimens being 18 inches in diameter. It is often to be seen in the markets at Covent Garden, York, and many Midland towns. It is largely used for making the table condiment known as Ketchup.

Musk Plant, the common name for *Mimulus moschatus*, a plant of the Figwort family (Scrophulariaceæ), native of North America, and cultivated in rooms in this country for its musky scent.

Musk Root. (*See* Sumbul.)

Musk Seed, the seeds of *Abelmoschus moschatus*, a strong perennial of the Mallow family (Malvaceæ), native of Bengal. The whole plant smells of musk. The seeds are used for scenting hair powder and pomatum.

Musk Tree (*Eurybia argophylla*, or better known as *Aster argophyllus*, the silver-leaved Musk Tree), a tree of the Composite family (Compositæ), having lance-shaped leaves 3 to 5 inches in length, silvery white on the under side, and smelling strongly of musk. It is a native of Tasmania, attaining a height of 20 to 30 feet, and a girth of 3 feet. Its wood is hard and beautifully figured, and is used for many purposes.

Mustard Shrub (*Capparis ferruginea*), a shrub of the Caper family (Capparidaceæ), native of the West Indies. Its berries are pungent like mustard, and on that account it is called Mustard Shrub.

Mustard Flour, the ground seed of *Brassica alba* and *B. nigra*, better known under the generic name of *Sinapis*. Annual weedy-like plants of the Cabbage family (Cruciferae), found wild in this country, but extensively cultivated in some parts for their pungent seeds, which when ground, sifted, and properly prepared, form the table condiment Mustard. The mustard plant is also used as a salad, obtained by sowing the seeds thickly, and cutting the young seedling plants when about 2 inches high.

Mustard Tree, the name of a tree thus described in the words of the New Testament: "A grain of mustard seed, the least of all seeds; but when it is grown, it is the greatest among herbs, and becometh a tree, so that the birds of the air come and lodge in the branches thereof" (St. Matthew xiii. 31, 32, etc.) Bible commentators differ greatly as to what was the plant here spoken of; for although the translation from the Hebrew and Greek has been rendered into the English word Mustard, there is nevertheless no evidence in proof that it is the plant we call Mustard (*Brassica alba* or *nigra*), which is above described as an annual weedy plant, seldom exceeding 2 feet in height. Nevertheless, judging from the account of travellers, there is every reason to believe that it was the common mustard plant, which in Palestine attains, it is said, the height of a horse and his rider, and even the height of 10 or 15 feet, thus verifying the words "greatest of herbs." Although only an annual, like most other Cruciferous plants, in autumn its branches become hard and rigid, and of sufficient strength to bear small birds which feed upon its seeds, and with spreading, rigid, naked branches, may well be called a tree. The late Dr. Royle, however, endeavoured to show that the mustard tree of Scripture was a very different plant from the above, and considered that it was more probably attributable to *Salvadora persica*, a thick-stemmed, soft-wooded tree belonging to the natural order Salvadoraceæ, with simple stems growing to a height of about 20 feet. Its fruits are berries like currants, and pungent like mustard. It is a native of Persia, extending to the hot valleys at the southern end of the Dead Sea. There is, however, much to be said against this view, one point being that as the *Salvadora* growing there would not be known to the people of Galilee, it is not likely to have been the mustard tree of the parable.

Mustard Weld or Charlock (*Brassica Sinapisrum*, better known as *Sinapis arvensis*), a weedy annual, enlivening corn-fields with its bright yellow flowers. Its presence, however, is a sign of unskilful cultivation. The seeds are used for feeding caged birds.

Myall-wood, a name of the hard violet-scented wood of *Acacia homalophylla*, native of New South Wales.

Myrobalans, a name given in India to the fruits of the genus *Terminalia*, large trees of the Myrobalan family (Combrétacées), common throughout India, Malay, Fiji, and other islands of the Pacific. Their fruits are winged drupes containing a hard stone. *T. bellerica* and *T. chebula* are large trees, native of the Circars and Pegu forests of India, having narrow lance-like leaves growing in tufts at the top of the branches. Their wood is white and is used for house-building. Their chief importance is for their fruits, which are angular or slightly-winged drupes, those of *T. bellerica* being oval, pentagonal, the size of a nutmeg, fleshy, and covered with a grey silky down containing a hard nut. The fruit of *T. chebula* is oval, about an inch and a half long and an inch in diameter, smooth, of pale greenish yellow, having a considerable quantity of pulp; the nut oblong, hard. Their properties are highly astringent, and they are used for tanning and dyeing black, for which purpose very large quantities are annually imported. They make as good ink as oak galls. The kernels of the nuts are eaten by the natives, and taste like filberts, but in large quantities they produce intoxication. *T. catappa* is a tree similar to the preceding, but differs in having broad elliptical leaves. The fruit, a drupe, is oval, oblong, compressed, smooth, having the margins elevated, when ripe of a yellowish colour. The kernels are wholesome, and have the flavour of almonds. In Fiji it is a favourite tree with the natives, who call it Tavola, and plant it near their houses.

Myrrh, a name applied to the plants of three very distinct families. First, Garden Myrrh (*Myrrhis odorata*), a perennial herb of the Carrot family (Umbelliferae), native of Britain, and cultivated for its aromatic scent. Second, the Myrrh of the Bible, which is the product of two distinct plants—1. The Myrrh carried by the Ishmeelites into Egypt, supposed by the best authorities to be the exudation of several species of rock-rose or gum *Cistus*, shrubs of the *Cistus* family (Cistaceae), the principal being *C. villosus*, *C. creticus*, and *C. salvifolius* (see

Ladanum). 2. *Balsamodendron Myrrha*, a small tree of the family Amyridaceæ, growing in rocky places, and on limestone hills on the Somali coast of Africa. The balsam exudes naturally from the stems and branches, but more abundantly from artificial incisions. It is a sticky white gum, which soon hardens, and is then collected. It is conveyed to Bombay, from whence it comes to this country. A similar product is also yielded by *B. Kataf* and *B. Opobalsamum*. Though much has been done of late years towards clearing up the identification of these plants, some uncertainty still exists regarding them. The gum is valued for its medicinal properties as well as for its perfume.

Myrtle, Tasmanian. (See Beech.)

Myrtle Tree (*Myrtus communis*), the typical representative of the Myrtle family (Myrtaceæ). It is a native of Western Asia, common in Palestine, and has been introduced and become naturalised in Southern Europe. In favourable situations it forms a small tree 20 or more feet in height, but is often seen as a bushy shrub. Its wood is hard and mottled, often knotty, and is much esteemed in turnery. An oil is obtained from it, which is used in perfumery, as also the leaves, which constitute sachet powders, pot pourris, etc. Its fruit, which is a pulpy black berry, is used in some countries as an aromatic condiment. It was introduced into this country about 300 years ago, and in protected situations, such as on a south wall, it is sufficiently hardy to withstand the ordinary winters of the climate of London. The Myrtle is mentioned in the Bible, and is used by the Jews as an emblem in the Feast of the Tabernacle, but only sprigs of the variety having three leaves in a whorl.

Narcissus, the botanical as also the familiar English name for a genus of bulbous plants of the Amaryllidaceæ, of which the Daffodil (*N. pseudo-narcissus*), Jonquil (*N. jonquilla*), the Poet's Narcissus (*N. poeticus*), Hoop-petticoat Narcissus (*N. bulbocodium*), and numerous other species, are patronised in this country for their early flowering. They are natives chiefly of Southern Europe. The Polyanthus Narcissus (*N. Tazetta*) is a native of Southern Europe and Western Asia, being abundant

in Palestine, and during the flowering season it is to be found in nearly every house, especially in Damascus. By some this is considered to be the Rose of Sharon, the original Hebrew word Bulb being translated Rose, and indeed a rosebud is something similar to the bulbs of this plant.

Nard. (*See* Spikenard.)

Nardoo (*Marsilea macropus*), a perennial aquatic of the Pepperwort family (Marsileaceæ), native of Australia; its leaves are four-lobed, trefoil-like, borne on slender stalks 4 to 6 inches long, on which are produced the spore-cases. It occupies extensive inundated tracts of land, and when dried up the spore-cases are found lying in great abundance like grains of wheat; they are largely collected and eaten as food by the natives, and for some time constituted the only food to the survivors of the ill-fated Burke and Will's expedition; but it is devoid of nourishment. It is represented in Eastern Europe by *M. quadrifolia*.

Naseberry Tree, a name in the West Indies for *Sapota Achras*, a large tree of the Star Apple family (Sapotaceæ), common in the West Indies and tropical America; its fruit is called Sappodilla Plum; in shape and size it resembles a bergamot pear; in colour it is like the medlar, and like it, it is not eaten until it begins to decay; it then loses its acrid milk, and becomes so sugary that many Europeans consider it too sweet.

Nasuta, a local Indian name for *Justicia nasuta* now separated as a distinct genus under the name of *Rhinacanthus communis*, a shrub of the Acanthad family (Acanthaceæ). It is sparingly branched, attaining a height of 6 to 8 feet, having large, elliptical, opposite, entire leaves, and axillary spikes of small white flowers. It is common in many parts of India and other Eastern countries. Its wood and woody root are held in high repute as a cure for skin diseases. It has latterly attracted some attention in this country under the name of Tong-pang-chong.

Natal Plum, the fruit of *Arduina bispinosa*, a compact stiff spiny bush of the Dogbane family (Apocynaceæ), with box-like leaves and small sweet-scented flowers, native of South Africa.

The fruits are oblong and drupe-like. In *A. grandiflora*, also known as the Natal Plum, the fruit is larger; it makes an excellent preserve.

Natchnee, the Indian name for *Eleusine coracana*, an annual decumbent finger-grass, cultivated in some parts of India, Egypt, and Abyssinia as a corn-food. It is largely used in India. In Abyssinia it is called Tocussa.

Necklace Tree. (*See* Bead Tree.)

Nectarine. (*See* Peach.)

Neem, or Nim (*Melia Azadirach*). (*See* Bead Tree.)

Negro Pepper. (*See* Guinea Pepper.)

Nelumbium. (*See* Sacred Bean.)

Neroli, a name in France for a pomatum made of grease impregnated with orange flowers. The name is also applied to an oil obtained from certain kinds of oranges.

Nettle, Common (*Urtica dioica*), a perennial herb of the family Urticaceæ, attaining a height of 2 to 5 feet; although generally despised on account of its stinging nature, its stem is, however, known to possess an excellent fibre, which is used in many parts of Europe for making fishing-lines, cloth, etc. Of late years it has become extensively cultivated in Germany, and by dressing, the fibre is made to become as fine as silk. The young shoots of the Nettle are eaten as a wholesome vegetable. *U. cannabina* of North America yields a good fibre known as Kentucky Hemp.

Nettle Tree (*Celtis australis*), a tree of the Elm family (Ulmaceæ), 30, 40, or more feet high, native of Southern Europe and Mediterranean coast of North Africa. In some parts of France and Germany it is planted as an ornamental tree; its wood is hard, and is used for furniture-making. As a genus it differs from *Ulmus* by having a small black berry, which is delicious and wholesome, and is eaten in some parts. It is believed by some to be the Lotos of the ancients (*see* Lotos). In Greece it is called Honeyberry. There are several other species, natives of North America, such as the Hackberry and Sugarberry (*Celtis crassifolia*), a fine species forming large

forests in some parts of the United States, having eatable fruit about the size of a pea.

Nettle Tree, Australian.—There are many species of arborescent tree nettles, one of the most conspicuous being *Urtica gigas*, a tree of New South Wales, which attains a height of from 70 to 80 feet. The trunk is often swollen at the base, forming buttresses many feet in diameter. It has large heart-shaped leaves, the effects of which (when touched) are not easily forgotten; cattle coming in contact with them become furious. The wood is porous, and even lighter than cork. *U. photiniphylla* is a large much-branched tree, native of Queensland, having elliptical shining leaves with scattered irritant prickles. *U. moroides* is a thick-stemmed tree with small cordate leaves, native of tropical Australia, a most virulent stinger. The three species were introduced into Kew about sixty years ago.

Ngai Camphor. (*See* Camphor.)

Nibung, or Wibong, the Malayan name for *Oncosperma filamentosa*, a tall, slender, smooth-stemmed, wing-leaved palm, attaining a height of 40 to 50 feet. It differs but little from *Areca*. It is the cabbage palm of Borneo. The stems are used for posts in house-building, and when split for rafters, etc.

Nicaragua-wood, the wood of *Cæsalpinia echinata*. (*See* Sappan-wood.)

Nicker Nuts. (*See* Bonduc.)

Niger-seed Oil. (*See* Ramtil Oil.)

Nightshade, Deadly (*Atropa belladonna*), a strong-growing perennial of the Potato family (Solanaceæ), native of this country and throughout Europe. It attains a height of about 3 feet, having broad oval leaves of a lurid colour, and a heavy mawkish smell, and solitary flowers of a brownish yellow, which are succeeded by a black berry closely seated on the wide-spreading calyx; it is about the size of a small cherry, and when ripe has a glistening and enticing appearance and sweetish taste, but is extremely poisonous, fatal consequences having occurred through its being sold by mistake, even in the streets of London, for blackberries. The whole plant is poisonous, the principle of

which is termed Atropine, but it is a useful and powerful medicine when properly used. Like henbane, it has the power of dilating the pupil of the eye. It is also called Dwal, and in olden times Dwal Water was a favourite with ladies for removing freckles, hence its name *Bella donna*, meaning Fair Lady.

Nipa (*Nipa fruticans*), a remarkable plant growing in the salt marshes of the Malayan Archipelago. It was at one time classed amongst the palms, but is now included with the Ivory Nut Palm in the family Phytelphaceæ, and placed near Pandanaceæ. The stem is about a foot thick, and lengthens in a decumbent position in the mud, sending up winged leaves from its apex, which attain a height of 8 to 12 feet. The most remarkable part of this plant is its fruit, which is of an oval form 2 or 3 inches in length, similar to and presumed to be the same as the fossil fruits found in the mud on the Island of Sheppey at the mouth of the Thames.

Nitre Bush.—*Nitraria Schoberi*, *N. tridentata*, and *N. Billardieri*, three closely-allied plants, but probably only forms of one species. They are natives of the salt plains of Siberia, region of the Caspian, Syria, and North Africa. They are stiff, rigid, thorny shrubs, with thick, fleshy, simple leaves, the whole presenting a forbidding aspect. They have tufts of small flowers and fruits like the gooseberry, are sweet, and are supposed by some to be the fruit that sweetened the waters of Marah, mentioned in Exodus, but there is no good ground for this supposition, only that the fruits are abundant about Marah. The genus *Nitraria* is placed by Hooker and Bentham in the Bean Caper family (Zygophyllaceæ), and is by some Greek writers supposed to be the Lotos of the ancients. (*See Lotos.*)

Nitta, or **Nutta**, a native name in Africa for *Parkia africana*, a tree of the Mimosa section of the Bean family (Leguminosæ). It attains a height of 40 feet, having compound winged leaves, consisting of many leaflets. It is a native of Western tropical Africa and some parts of India, and has become naturalised in the West Indies. The pods grow in bunches, each containing about 15 seeds, embedded in a yellowish sweet pulp, of which

the negroes are very fond. In Soudan the seeds are roasted as we roast coffee, then bruised and placed in water, which subsequently ferments, and is allowed to remain till it becomes putrid, the seeds are then well washed and pounded, and the powder made into little cakes, which are used as a sauce for all kinds of food, but to Europeans the smell is very disagreeable. The farinaceous matter surrounding the seeds is made into a pleasant drink, and they also make it into a kind of sweetmeat. It bears the English name of the African Locust Tree, and in botany is named after the African traveller Mungo Park, who first brought it into notice.

Nopal, the name in Mexico for the plant on which the cochineal insect breeds (*Opuntia cochinellifera*), a species of the Cactus family. It is extensively cultivated in Mexico, especially at Oaxaca. The plantations are called Nopaleries; some contain at least 50,000 plants, arranged in rows. It grows about 8 to 10 feet high, and has a tree-like appearance. Its stem and older branches are nearly cylindrical, and different from most species of *Opuntia*, in being spineless and of an ash-grey colour. The young branches, usually called joints, are flat and of an oblong or obovate form, varying from 5 to 6 inches to a foot in length; of a deep-green colour. The cochineal insect belongs to the order Hemipteræ, the males having wings and the females none. It is nearly allied to the mealy bug, common in hothouses, or to the blight on apple trees, the female being enveloped in white flocky matter. In time the whole of the upper part of the plant becomes enveloped in this flock, under which the females are crowded. When full grown they are of a red colour, and are then brushed off and killed by the heat of the sun or hot water. They are then the Cochineal of commerce. According to the celebrated traveller Humboldt, the quantity in his time exported from Oaxaca alone was valued at £500,000. It is now cultivated in Brazil and other parts of America, and has been introduced into Madeira, Teneriffe, and the Canaries, from whence a considerable quantity comes to this country; but Mexico still produces the greatest

quantity and the finest kind. The importation from all sources for the year 1880 amounted to 27,463,722 lbs. Its importance consists in its furnishing the finest crimson dye, and it is the source of the colour known as Carmine.

Noyau, a name in France of a liqueur said to be prepared from the kernels of *Cerasus occidentalis*, a tree of the Plum family (Drupaceæ), native of Jamaica, where it is called Laurel. It is more than probable that the kernels of the common cherry are also used in the preparation of Noyau, and it is said that a species of *Convolvulus* (*C. dissectus*) furnishes material from which the liqueur is made. Noyau is chiefly used for flavouring confectionery.

Nutmeg (*Myristica fragrans*), a small branching tree of the family Myristicaceæ, attaining a height of 20 or 30 feet. It is extensively cultivated in the Molucca and other islands of the Malayan Archipelago and in India. The fruit is about the size of a walnut, consisting of a rather thick fleshy skin, containing a single nut, which on the fruit opening is seen to be enveloped in a red net-like covering (aril), which is the Mace, the kernel being the Nutmeg of commerce. *M. fatua* is cultivated in Brazil. The fruit of this is longer than the true Nutmeg, and is sold in this country under the name of Long Nutmegs. *M. obovata* and other species, cultivated in the Philippines and Madagascar, occasionally come to this country for sale. An oil is extracted from the nuts called Oil of Mace; the bark stains red. In Malacca and Penang the Nutmeg has been extensively cultivated, but during the last few years the trees have been attacked by a disease which has destroyed whole plantations, for which no remedy has yet been found. *Myristica sebifera* is a large tree 50 to 60 feet high, common in the forests of Guiana, North Brazil, and Panama. By maceration of the nuts in water, a solid oil is obtained, which is used in candlemaking.

The fruits of several species of the Laurel family are called Nutmegs.

1. *Nectandra Puchury*, a tree, native of Guiana. The

fruit is aromatic, the cotyledons are the Puchurim Beans of commerce.

2. *Acrodiclidium camara*, a tree, native of Guiana, produces the nut known by the name of Ackawai Nutmegs. It is highly valued as a cure for colic and dysentery.

3. *Aydelendron Cujumary*, a tree, native of Guiana, producing an aromatic nut known by the name of Cujumary Beans, which are esteemed as tonic and stimulating.

4. *Agathophyllum aromaticum*, a tree, native of Madagascar. The fruit is known by the name of Clove Nutmeg.

5. *Cryptocarya moschata*, a large tree, native of Brazil. Its fruit is aromatic, called Brazilian Nutmeg. Although the nuts of these trees are called Nutmegs, they are, however, but a poor substitute for the true Nutmeg.

Nutmeg, Peruvian. (*See* Sassafras, Chilian.)

Nutmeg, Stinking (*Torreya myristica*), a small tree of the Yew family (Taxaceæ), native of California, attaining a height of 20 to 30 feet. It has received the name of Stinking Nutmeg or Stinking Yew on account of the leaves and wood emitting a disagreeable odour when bruised or burnt. It is also known by the name of California Nutmeg on account of the kernel of its fruit being about the size of, and ruminated like that of, the true Nutmeg, but it possesses no aroma.

Nux Vomica (*Strychnos Nux-vomica*), a small straggling branched tree of the Strychnos family (Loganiaceæ), native of India. It has sessile leaves, with several strongly-marked veins running from the base to the apex. The flowers are small, and the fruit resembles an orange, but has a hard rind, and contains numerous round flat seeds, like broad beans embedded in pulp, and when dry covered with white silky hairs. They contain two most deadly poisons, Strychnine and Brucine; but the pulp is harmless. The bark and roots are extremely bitter, and are favourite remedies amongst the natives for snake-bites, and are also used in fevers. The seeds or beans, as they are called, chiefly come from the East Indies. Forty years ago the extent of the annual importation was only about 600 lbs.; it now

amounts to about 6000 cwts. In consequence of these large importations of *Nux Vomica*, it has been thought that it was used by brewers to give a bitter taste to ales. This, however, has been disproved, but, as the consumption for medicinal purposes is but small, it is still unknown to what use the bulk is put.

Oak.—This name is typically represented by numerous species of the genus *Quercus* of the family Cupuliferae. About 20 species of other families are also called Oak, all of which will be found noticed under their respective vernacular names.

The following is a brief notice of the principal economic species :—

1. Black American, also called Black Jack (*Q. nigra*), a tree attaining a height of about 30 feet, having a very black bark, native of North America.

2. Belote (*Q. Ballota*), an evergreen tree 20 or 30 feet high, native of Southern Europe and North Africa, also of Palestine. Its acorns are large and sweet, forming an important article of food, either raw or boiled. Ornaments are made of the cups.

3. Black (*Q. tinctoria*), a deciduous tree, attaining a height of 80 to 100 feet, native of the United States. Its bark is black, and is used for tanning and for dyeing leather a brilliant yellow, which is effected by a principle contained in the bark called Quercitrine.

4. British (*Q. sessiliflora* and *Q. pedunculata*), forms or varieties of *Q. Robur*. These two forms are found to differ in the quality of the timber, and in the acorns of the first being without a foot-stalk, while in the second they hang loose. Both are natives of this country and throughout Middle and Northern Europe. The Oak was venerated by the Druids, and in ancient parks some trees have attained a great size and age. The principal use of Oak timber is for shipbuilding. The wood of *Q. sessiliflora* is heaviest and toughest, that of *Q. pedunculata* being like chestnut is much used by cabinetmakers for ornamental work. Oak bark is used for tanning leather, and of all the substances known for that purpose that can be had in quantity British Oak bark is found to be the best; but the home supply falls far short of the

demand, large quantities being imported from the Continent. It is also of great value in the preparation of dyes. The spent bark of tan-works is of little value as manure; it ferments and maintains heat a long time, and on that account is used in hot-houses chiefly for the cultivation of pine apples. But since the introduction of improved means of cultivation it is but little used.

5. Champion, or Red Oak (*Q. rubra*), an ornamental tree with large lobed leaves of a reddish colour, native of North America. The bark is comparatively smooth, of a dark colour, and very thick. The wood is considered of excellent quality. It enters largely into the manufactures of the country, but its scarcity prevents its being much imported.

6. Cork (*Q. Suber*), a common tree throughout all parts of Southern Europe. It has a thick bark, from which corks and bungs are made. Large quantities of this bark are imported from Spain. When the tree is nine or ten years old, the outer rough bark cracks, and the inner layer gradually thickens, and at the expiration of another six or seven years is sufficiently thick for removal. This is effected by cutting a slit in the bark from the top to the bottom of the stem of the tree, and a slit round the tree at each end in the proper season, the bark then readily slips off. It is afterwards flattened by soaking in water, and is finally dried, when it is ready for exportation, and for the use of the corkmaker.

7. Durmast, a name applied to *Q. pubescens*, recorded in *Hortus Kewensis* as a native of England, but considered to be a variety of *Q. Robur*.

8. Dyer's (*Q. tinctoria*). (See Black Oak above.)

9. Kermes (*Q. coccifera*), a small evergreen tree, native of the countries bordering on the Mediterranean, also of Palestine. A bug-like insect (*Coccus ilicis*), infests the trees, covering them with a flocky matter similar to the apple tree blight. The insect is extensively collected and yields a scarlet dye nearly equal to cochineal, and is the "scarlet" mentioned in Scripture.

10. Live (*Q. virens*), an evergreen tree, 30 to 40 feet high,

native of the Southern United States, used in this country as an ornamental tree.

11. Red. (*See* Champion.)

12. Swamp (*Q. Prinus*), a tree, attaining a height of 80 to 90 feet, native of Carolina and other Southern States of America.

13. Valonia (*Q. Ægilops*), a handsome tree, attaining a height of 30 to 40 feet, native of Southern Europe and the Levant. The acorn cups contain a great quantity of tannin, and several thousand tons are annually imported into this country from Smyrna and other parts, used chiefly for tanning, dyeing, and making ink.

14. Willow (*Q. Phellos*), a tree, in good soil attaining a height of 60 to 70 feet, but in poor soil it remains a shrub, only a few feet high. Native of North America, grown in this country as an ornamental tree.

15. Wainscot, or Turkey Oak, also called Mossycup Oak (*Q. Cerris*), a large and handsome tree, generally with spreading branches, native of the South of Europe, and introduced into this country about 120 years ago. Its wood is much used in turnery and cabinet-work.

16. Mongolia.—*Q. mongolica*, *Q. dentata*, trees said to be similar to our common Oak, natives of Northern China, where extensive tracts of hill country are covered with them. A kind of silkworm feeds upon the leaves.

17. Evergreen (*Q. Ilex*), native of Southern Europe, introduced to this country about the end of the sixteenth century, where it forms an ornamental evergreen bush, 20 to 30 feet high, seldom becoming a single-stemmed tree, unless early trained with that view. In severe winters it is much injured. It is also known by the name of Holm Oak.

18. Abram's Oak of Mamre (*Q. pseudo-coccifera*).—A fine specimen of this grows on the spot where it is supposed the tree stood under which Abraham entertained the three angels, but what that tree was cannot be ascertained. It is believed that if any person cuts or maims the present tree he will lose his first-born son. This Oak is of moderate height, having a trunk 23

feet in girth, and 90 feet spread of branches ; and although it has the appearance of being a very old tree, yet it could scarcely have been in existence in the time of Abraham. In the winter of 1856-7 it suffered the loss of a large limb, which was broken off by a heavy fall of snow.

Oaks abound from the equator north through Central America, Mexico, and northward into Canada. Several Mexican and other southern species have been introduced, but do not prove hardy. The North American species are large handsome trees, some being more than 100 feet in height. Most of them are hardy, and have been well known in this country for more than a hundred years, many being very ornamental. About a dozen species have been introduced from Northern India, but they are not sufficiently hardy to live in the open air in this country. Several have also lately been introduced from Japan and China, but their qualities have not yet been ascertained.

Oak, She, a name in Australia for the species of the genus *Casuarina*, of which there are about 20 ; they represent the Beef-wood family (Casuarinaceæ). They are widely distributed throughout the islands of the Indian Archipelago and Pacific Ocean. They are leafless trees, with slender cord-like, generally pendulous branches, which are striated with sheathing joints, having much resemblance to the genus *Equisetum* (weedy plants called Horsetails). Flowers inconspicuous ; male flowers in spikes or catkins ; female flowers in compact heads, becoming a woody cone about an inch in length, with many cells, each containing a small-winged nut-fruit, which by ordinary observers is called the seed. On being made wet and viewed through a microscope it is seen to be densely covered with beautiful spiral vessels. *Casuarina equisetifolia* and *C. torulosa* are the most common. In Australia they are known by the names of Swamp Oak, She Oak, Forest Oak, and also (on account of the appearance of their wood) Beef-wood. Their pendulous branches and sombre appearance have brought them into special notice for planting in cemeteries ; their wood is hard, and is sometimes known as Ironwood. It is used by the natives for

making their war clubs, and for many other purposes, as it takes a fine polish. Their bark furnishes a dye, and the burnt ash is made into soap.

C. muricata, native of South India, is valued for its showy wood; its weight, however, forms an objection to its use.

Oak Galls (*Quercus infectoria*), a tree, native of the Levant. It produces the best Galls of commerce, which are used in the manufacture of ink, and for dyeing purposes. They are extraneous productions caused by the puncture of an insect, a species of cynips, laying its eggs on the leaves and twiggy branches of the tree, causing an unnatural growth, that becomes a Gall, and contains the pupa of the future insect. They are found abundant on oak trees in this country, well known as Oak Apples, but not of the quality to be useful. They are injurious to the trees.¹

Oat (*Avena sativa*), an annual corn-grass of which there are many varieties, supposed to have in process of time originated from the Wild Oat (*A. fatua*). Pliny and Dioscorides mention it as being early known in Greece. It is extensively cultivated in Middle and Northern Europe to the 60th degree of North latitude. Its entire grains form an important article of horse food, and when ground, which removes the outer skin or husk, they become oatmeal, which is used for making porridge and oat-cakes, and forms a staple and nutritious food greatly used by the people in Scotland. The entire grain cleared of its skin and dried becomes the Emden Groats of the shops. By the grinding and dressing of the meal the skins or husks of the grain are removed, and may be considered useless; but as there is always more or less of the fine farina attached to them they are utilised under the name of seeds for making the Scottish dish called Sowans. The preparation consists in placing a quantity of seeds in a tub or other large vessel, and pouring on them a quantity of water. The vessel is then covered up and allowed to stand two or three weeks. During that time the seeds are frequently stirred up. The water then becomes of a turbid nature, and at

¹ Oak Manna (see Willow).

the end of the above time it is sour, and is passed through a strainer. The seeds are thus retained, and the milky liquid is now ready for making sowans, which is done by putting a quantity of the milky fluid in a pot and placing it on a slow fire, and as it gets hot it requires to be continually stirred, and it gradually thickens. When sufficiently thick, it is poured into vessels, and eaten hot or cold with milk and butter, and is the common supper in many rural districts of Scotland. In olden times sowans formed the afternoon refreshment to reapers in the harvest-field. It is cool and refreshing, pleasantly acid, and perfectly wholesome. The awn of the Wild Oat is long and rigid, and extremely sensitive to the changes of the atmosphere, as regards moisture; but it soon loses its hygrometric property.

Oca, a name for the tubers of *Oxalis crenata* and *O. tuberosa*, herbs of the Oxalis family (Oxalidaceæ), natives of Bolivia. Their tubers are farinaceous, and used by the natives as food.

Ochro, a name in the West Indies for the seed-vessels of *Hibiscus esculentus*. They are very mucilaginous, and used for thickening soup. They are also used in the East Indies and in many tropical countries for a similar purpose.

Oil-cake. (See Flax, Cotton, Rape.)

Oil of Rhodium, an oil obtained from the wood of *Rhodorrhiza scoparius* and *R. floridus*, which is said to be used in adulterating attar of roses. They are climbing shrubs of the Bindweed family (Convolvulaceæ), natives of the Canary Islands. On account of the scent, their wood is called Rose-wood. It is now very rare.

Old Man's Beard. (See Moss, American.)

Oleander (*Nerium Oleander*), a handsome evergreen shrub of the Dogbane family (Apocynaceæ), native of the Levant, and naturalised in the South of Europe. It has been cultivated in this country for 300 years, and, with the Myrtle and Orange, was one of our first greenhouse plants. It is highly ornamental, and has very fragrant flowers. It grows abundantly in the valley of the Jordan, and when in flower is very beautiful.

It is considered by some Bible commentators to be one of the "willows of the brook." The whole of the plant is poisonous, and it is recorded that soldiers in Spain were poisoned through their meat being roasted on spits made of the peeled stem.

Oleaster (*Elæagnus angustifolia* and *E. orientalis*, now considered as one species under the name of *E. hortensis*), a small tree of the Oleaster family (Elæagnaceæ), growing from 16 to 20 feet high, having hoary willow-like leaves, and small yellow flowers, which perfume the air for a considerable distance. It is a native of Southern Europe and Western Asia, forming a scrub in the desert. The berries are dried by the Arabs and made into cakes, and are supposed to have formed part of the merchandise that the Ishmeelites carried into Egypt. The berries are known by the name of Trebizond Dates.

Olibanum. (See Frankincense.)

Olive (*Olea europæa*), a small tree of the Olive family (Oleaceæ). Although this receives the specific name of *europæa*, yet it is doubtful whether it was originally native of Europe; but it is well known to be a native of Western Asia. It is recorded to have been introduced into Italy (578 B.C.) It is a small, shrub-like, branching evergreen tree, somewhat spiny, having smooth or slightly hoary stiff leaves, about the size and shape of tea-leaves, producing in their axils tufts of small white flowers, followed by an oblong drupe or berry-like fruit, bluish black when ripe. It is a very long-lived tree, growing in the most barren dry places, and is extensively cultivated in all countries bordering on the Mediterranean. Olive Oil is obtained by expression from the pulp of the fruit, and is imported to this country from Italy and other ports of the Mediterranean. Salad or Florence Oil comes in flasks enclosed in wickerwork. The green unripe fruits are pickled, and form a considerable article of trade. The oil produced from the olive plantations of Palestine formed a lucrative article of trade with the Tyrians. In 1 Kings it is stated that Solomon gave Hiram, King of Tyre, "twenty measures of pure oil." In the present day Hebron is celebrated for its Olive orchards. Recent travellers

describe seven Olive trees as growing at Gethsemane, which, judging from their description, is sufficient to warrant the supposition that they were trees at the time Christ "went as He was wont to the Mount of Olives." One of the chief trades with Jerusalem in the present day consists of chaplets and small toy articles, many of which are made of Olive wood. A branch of Olive wood is considered an emblem of peace. It may be said that the Olive tree is now cultivated in most countries favourable to its growth for the sake of its oil; its principal use being for food, making soap, dressing woollen cloth, and lubricating machinery. The following will be sufficient to give an idea of the extent of its use:—At Nice the Olive orchards occupy upwards of 15,000 acres, and in good years the estimated produce is 180,000 to 200,000 gallons. Equal quantities are produced in other parts of the South of France, Italy, and other Mediterranean countries of Europe. In Tunis 5,000,000 Olive trees are grown, which yield an annual average of 44,000 tons of oil, of which one-fifth comes to Great Britain. In Persia the Olive groves are said to yield 100,000 cwts. of fruit; large quantities are used in the country, and also crushed for the oil for the manufacture of soap. The Olive trees of Provence are at the present time (1880) threatened with a scourge, which may prove as disastrous as the phylloxera has to the vine. It is caused by an insect (*Daucus olea*), which lays its eggs in the young fruit, causing it to fall before maturity.

Olive, Wild Barbadoes (*Bontia daphnoides*), a small tree of the Myoporad family (Myoporineæ), native of many parts of the sea-shore in the West Indies. Its resemblance to the olive tree has led to its being called by the above name. It possesses no special properties.

Olive-wood, a name in New South Wales for *Elaeodendron integrifolia* and *E. australe*, trees of the Spindle Tree family (Celastraceæ). The first is a large tree, abundant in the forests of Pegu and about Rangoon; the second is a native of New South Wales, and attains a height of 30 to 40 feet, with a

diameter of 8 to 14 inches. The timber of both is hard and white, adapted for fancy and cabinet work.

Onion (*Allium Cepa*), **Leek** (*A. Porrum*), **Garlic** (*A. sativum*), biennial cultivated esculents of the Lily family (Liliaceæ). It is scarcely necessary to describe these useful and well-known esculents. Their use is of great antiquity, for we read that leeks, onions, and garlic were cultivated in Egypt in the time of Moses; and they appear to have been highly esteemed by the ancient Egyptians, as Herodotus relates that in his time (B.C. 413) there was an inscription on the great pyramid (1062), stating that a sum amounting to 1600 talents had been paid for onions and garlic which had been supplied to the workmen during its erection. Presuming the talent to be the Greek, the value in English money would be £428,800. In course of time they found their way to Western nations. It is recorded that the Leek is found wild in Switzerland.

Onion, Welsh (*A. fistulosum*), a strong-rooted perennial, producing numerous erect, hollow, sharp-pointed leaves, a foot or more in length, native of Siberia, recorded to have been introduced in 1629, and cultivated in gardens under the name of Welsh Onion; but how it came to receive that name is not known. It is not in much repute as a culinary vegetable.

Opium. (See Poppy.)

Opopanax, a gum-resin produced by *Opopanax chironium*, formerly known as *Pastinaca opopanax*, thus showing its affinity to the garden parsnip. It belongs to the Carrot and Fennel family (Umbelliferae). It attains a height of 6 or 7 feet, furnished with bipinnate leaves and cordate segments, and compound umbels of yellow flowers; native of Southern Europe. The plant yields a milky juice, which hardens and becomes a gum-resin, having properties similar to Gum Ammoniacum. It was at one time held in high repute, but is now little used medicinally.

Opuntia. (See Indian Fig.)

Orache, or Sea Purslane (*Atriplex Halimus*), a low shrub of the Spinach family (Chenopodiaceæ), with succulent leaves;

native of the South of Europe and Western Asia, growing in desert places. It is supposed to be the plant spoken of in the book of Job as "Malloys."

A. portulacoides is a shrubby species similar to the last, and abundant on the southern coasts of this country. It is mucilaginous, of the nature of spinach.

Orange (*Citrus Aurantium*), a low, much-branched tree of the Orange family (Aurantiaceæ), found wild in Western and Upper India, and early cultivated in Persia, from thence introduced to the countries of the Mediterranean and to Italy about the ninth century. Like other plants long cultivated by man, many varieties have sprung up, such as the Blood, or Malta Orange, which has a red rind and flesh. The Mandarin is also a small, rather flat fruit, which when ripe readily separates from the skin. It is very rich and sweet, and is extensively grown and highly prized in China. The Bergamot is a small Orange, from which an essence is obtained called Bergamot Oil. It is largely made in Sicily. Besides the sweet varieties of the common Orange, there is a kind called the Bitter or Seville Orange; this is largely employed for making marmalade, candied orange peel, and a bitter tincture. From the Sweet Orange wine is made. The Orange tree is largely cultivated in most countries on both sides of the Mediterranean, and its fruit forms an extensive article of commerce. Oranges come to this country principally from ports in the Mediterranean, Spain, Portugal, and the Azores, those of St. Michael's being of a very fine quality. The total quantity of oranges and lemons imported into this country from all ports in 1880 amounted to 3,676,249 bushels, value £1,469,124. The Oranges for export have to be gathered before they are perfectly ripe, and on that account their true flavour is not known to those who eat them in this country. In France and other parts Orange trees are much cultivated for the sake of their flowers, from which is distilled Orange flower water. The Orange tree attains a great age, those in the groves in some parts of Spain being more than 600 years old, some individual trees having been known to produce 6000 fruits

in one year. At Nice, where the Orange flourishes in the open air, a tree is recorded to have grown to the height of 50 feet, with a trunk that required the arms of two men to embrace it. The Orange also attains a great age even under artificial cultivation; one growing in a box at Versailles, in France, is said to have been sown in 1421. The wood of the Orange resembles boxwood in density and colour. The tree has become naturalised as well as cultivated in the United States, especially in Florida, where there are extensive groves, occupying a tract of country between the latitudes 27° and 29° North, which is said to contain 20,000,000 trees, and vast quantities of the fruit are sent to all parts of the United States, but the quantity falls short of the demand. Large quantities are imported from Sicily, and even from the island of Tahiti, from whence in 1869 eleven vessels, having a total tonnage of 1468 tons, conveyed cargoes of oranges to San Francisco, and from thence by rail they are distributed throughout the United States, even to the towns of the Atlantic. Orange trees have within the last fifty years been introduced into and cultivated with success in the Australian colonies.

Orange-root. (*See Yellow-root.*)

Orchil (*Roccella tinctoria*), a foliaceous species of Lichen, growing in tufts on rocks. It is from 2 to 6 inches long, and varies much in breadth, which has led to several of the more distinct forms being regarded as species. It is found in all parts of the world, conducive to plant life, even on the dry rocks of Aden, and is abundant on the rocky shores of this country, often growing on perpendicular cliffs, from which situation it is collected, men being lowered with ropes for that purpose. It has been extensively used in dyeing, and originally it formed a valuable article of commerce. The average annual imports amounted at one time to 6000 tons, but like many other things of the past, lichen dyes are now being superseded by fine dyes obtained from coal-tar. The delicate chemical test called Litmus is obtained from this and other lichens.

Many other lichens resembling the *Roccella* in habit, but growing on trees, are found in this country. *Ramalina fraxinea*

and *R. farinacea* are most common, and generally their growth denotes unhealthy forest vegetation. They yield but a small amount of colouring matter.

Orchis, the name of a Linnæan genus, and the type of an extensive family of plants termed Orchidaceæ, generally spoken of as Orchids. The number of known species exceeds 3000. They are found more or less abundantly in all temperate and tropical countries; the greater number are epiphytal—that is, growing on trees; some grow on rocks, and a considerable number are perennial herbs, with tuberous roots growing in the ground, of which 42 are natives of Britain. Although the species are numerous, few possess economic properties; the principal being *Vanilla* (which see), and a few of those with tuberous roots yield Salep (which see). Orchids have, during the last fifty years, become highly patronised as curious and showy garden plants, and to obtain them plant collectors are specially sent to their respective countries; and they have thus become important trade plants. Hothouses have been specially adapted for their cultivation, and they form an important and attractive feature in all horticultural exhibitions; and some special kinds realise high prices—even at public sales £500 and £600 has been realised in one day; but this, during the last year (1881), has been surpassed by the sale of an amateur's collection, which occupied several days, and which realised over £5538, some individual plants being sold for £20, £50, and £100, and even more. The species thus patronised are, however, few, in all not exceeding one hundred, consisting of species of the genera *Aerides*, *Saccolabium*, *Vanda*, *Dendrobium*, *Phalænopsis*, *Angræcum*, *Odontoglossum*, *Cattleya*, *Stanhopea*, *Cypripedium*, and a few others. This presents a strong contrast to the first notice of Orchids as garden plants. In the eighth edition of Miller's *Gardener's Dictionary* of 1768, under "*Epidendrum*," he says:—"But as the plants cannot, by any art yet known, be cultivated in the ground, it would be to little purpose to enumerate them, though, could the plants be brought to thrive, many of them produce very fine flowers of uncommon

form." He further says that he had "three species sent from America, which he planted with care in pots and placed them in a stove, where they showed their flowers, but the plants soon after perished." However, in time their cultivation became understood, and new species continued to be introduced, chiefly from the West Indies and Brazil; and in the second edition of *Hortus Kewensis* (1813), 84 exotic species are recorded, and in 1850 the collection in the Royal Gardens, Kew, numbered 830 species, the greater number of which were considered only as botanical curiosities. For the curious forms and movements see Darwin's book on *Orchids*.

Ordeal Bean of Old Calabar. (*See* Calabar Bean.)

Ordeal Tree of Madagascar (*Tanghinia* or *Cerbera venenifera*), a soft-wooded, small tree of the Dogbane family (Apocynaceæ), with stiff branches and elliptical lanceolate leaves 4 or 5 inches in length, generally in tufts at the apex of the branches, and leaving a prominent mark or scar on falling away. It has pretty, whitish-pink flowers, and produces a fleshy, fibrous drupe about the size of a magnum bonum plum, containing a hard stone-like seed, the kernel of which is highly poisonous. In Madagascar persons suspected of crime are made to swallow a small portion of the kernel, and if they die from its effects are supposed to be guilty. It is said to produce death in twenty minutes. Condemned criminals are also put to death by simply being pricked with a lance dipped in the juice of the kernels.

Orris-root.—*Iris florentina*, *I. germanica*, and *I. pallida*, species of the Iris family (Iridaceæ). They belong to the group having thick creeping rhizomes, native of the South of Europe. These rhizomes have a strong smell of violets, and form the sweet-smelling Orris used in perfumery. (*See* Iris.)

Osage Orange (*Machura aurantiaca*), tree of the Mulberry family (Moraceæ), native of North America. It is a straggling tree, which, on account of its strong spines, is often used as a hedge plant; it is hardy in this country, and forms with us a low shrub. The fruit (so called) consists of a firm fleshy globose receptacle the size and colour of an orange, but is not eatable.

Osier (*Salix viminalis*), a small tree of the Willow family (Salicaceæ). This plant, together with other species of *Salix*, furnishes the Osiers used for basket-making, and although much cultivated in this country, the supply is not sufficient to meet the demand, large quantities being yearly imported from Holland.

Oswego Meal. (*See* Maize.)

Oswego Tea (*Monarda didyma*), a perennial herb of the Mint family (Labiatae), attaining a height of 1 to 2 feet, having whorled heads of fine scarlet flowers. It is a native of North America ; the leaves have been used as a substitute for tea.

Otaheite Apple, called by the natives Vi, the fruit of *Spondias dulcis*, a tree of the Cashew Nut family (Anacardiaceæ). It abounds in most of the Polynesian islands, and has been introduced into many parts of the tropics, being cultivated for the sake of its fruit. It attains a height of 50 to 60 feet, and has dark-green winged leaves, which contrast with its golden fruit. The average size of the fruit is that of an apple, and Dr. Seemann says he measured one which was a foot in circumference and weighed 1 lb. 2 oz. The rind tastes of turpentine, but the pulp has a fine apple-like smell and an agreeable flavour. In Otaheite the wood is much valued for making canoes. Another species closely allied to the above is *Spondias tuberosa*, a native of the Paraiba district of Brazil. The fruit is oblong, about the size of a large gooseberry, and yellow when ripe. It is not fit to eat until it is perfectly ripe and falls to the ground. This tree is remarkable for producing aerial roots, which on reaching the ground expand and form large black hollow tubers of a cellular structure, each containing about a pint of water, which in dry weather form a natural supply of water to the tree, and also to travellers when it otherwise is scarce.

Otto or Attar of Roses. (*See* Rose.)

Ourari. (*See* Urari.)

Overlook, a name given by the West Indian negroes to *Canavalia gladiata*, a strong-growing trifoliate-leaved climber of the Bean family (Leguminosæ). It is common in woods in the East and West Indies, tropical Africa, Mexico, Brazil, etc.

It is planted to mark the boundary of plantations of the negroes, who have a superstitious notion that it acts as a watchman and protects their property from plunder.

Owala, a name in the Gaboon country of Africa for *Pentaclethra macrophylla*, a tree of the Mimosa section of the Bean family (Leguminosæ). It attains a height of 50 to 60 feet, having bipinnate leaves. The legumes (pods) are about 2 feet long, consisting of two flat woody valves. The seeds contain a limpid oil, and are eaten by the natives.

Oyster Plant (*Pulmonaria maritima*), a creeping-rooted herb of the Borage family (Boraginaceæ), native of the northern coasts of this country, especially in the east of Scotland, growing on the stone and sand just beyond the reach of the tide. It has ovate glaucous leaves and blue flowers, produced in one-sided panicles on a decumbent flower-stalk. Its fresh leaves have a strong flavour of oysters, hence its name. By modern botanists it has been separated from *Pulmonaria* as a distinct genus under the name *Steenhammara*.

Paddy, a name throughout India for unhusked rice, of which there are many varieties. (See Rice.)

Pala Indigo, an Indian name for a dye obtained from *Wrightia tinctoria*, a small tree of the Dogbane family (Apocynaceæ), native of Southern India. An inferior kind of indigo is prepared from its leaves. Its wood is beautifully white, close-grained, and ivory-like; its principal use in India being for making toys. Another species is *W. antidysenterica*, a small tree, also a native of India; its wood is very hard, and has been tried for engraving, but has not been found to answer. It is used in India for posts and the like. Its bark is the Conessi Bark of the Indian Materia Medica. It is valued as a tonic and purgative, and is useful in dysentery.

Palillos, a name in Peru for *Campomanesia linearifolia*, a tree of the Myrtle family (Myrtaceæ), attaining a height of 20 to 30 feet. The fruit is as large as a moderate-sized apple, and of a bright-yellow colour, and is one of the ingredients used in making the perfumed water called "Mistura."

The leaves smell like myrtle, but have an acid astringent taste.

Palissander, sometimes written Palixander-wood, a name sometimes given to Rosewood as well as to Violet-wood.

Palms, the family of Palms, termed Palmaceæ, or as Humboldt calls them, "the princes of the vegetable kingdom," consists of about a thousand known species. Their chief home is in the tropics, but few extending beyond; their southern limit being New Zealand, and their northern limit 40°; represented in Southern Europe by the Dwarf Fan Palm (*Chamærops humilis*) and the Date Palm (*Phoenix dactylifera*.) With the exception of grasses, no plants are of more importance to man than palms, more especially with reference to the inhabitants of the torrid zone and contiguous regions; their fruits and the pith of their stems affording abundance of wholesome food and drink, and their leaves supplying material for all requirements of domestic economy, the particulars of which will be found under their respective local and familiarly-known names. The aspect of palm trees being very different from the trees of Europe, led to their being early sought after as objects of curiosity, and in 1768 five species are recorded as growing in the Royal Gardens at Kew six years after their establishment. Fifty years later their number had increased to twenty-two, and, although not growing under very favourable circumstances, several had attained a size to merit their being spoken of as "the great Palms at Kew." In 1848 they really had the chance of becoming great, being then placed in the noble Palm-house specially erected for their reception. In 1864 the collection consisted of 144 species.

Palm Honey. (*See* Coquito Nut.)

Palm Oil is obtained from the fruit of several kinds of Palms, the principal being *Elæis guineensis*, a wing-leaved, low-growing palm, seldom exceeding 20 feet in height. Its fruits are produced in dense bunches, each fruit is about the size and appearance of a date, with an orange-red rind, which envelops a pulpy matter surrounding a hard nut, from both of which the Palm Oil of commerce is obtained, that from the nut being

the finest, and used in cookery. The greatest quantities coming from the kingdoms of Ashantee and Dahomey, where the palm grows in great abundance, and being of great longevity, the produce may be considered inexhaustible. In this country it is chiefly employed for the manufacture of soap and candles. Another oil-yielding species of *Elais* is *E. melanococca*, a native of some parts of tropical America. A low-growing palm, rising but little above the ground, its fruits are of a red colour, but its oil does not form an article of commerce with this country.

Palm Wine or **Toddy**, the sap of several palms. The principal ones of India are—1. *Phoenix sylvestris*, the Wild Date, a wing-leaved palm, attaining a considerable height, common throughout India. 2. *Borassus flabelliformis* (see Palmyra Palm). 3. *Caryota urens*, a graceful palm, attaining a height of 50 or 60 feet, bearing a crown of bipinnate leaves. The wine is obtained by a man, called the toddy-man, climbing the tree and cutting the flowering spadix before it expands, to the cut end of which a vessel is hung, into which the sap flows, and is collected every morning. In some cases it continues to flow, more or less, for a month. When fresh, toddy is a pleasant drink, but it soon ferments and becomes intoxicating. When distilled it becomes a spirit called Arrack—the gin of India. In Borneo the best toddy is obtained from *Saguerus saccharifera*; it yields a gallon a day for two months. *Raphia vinifera*, a wing-leaved palm, supplies the toddy of Western tropical Africa. This palm, like its congeners, bears a large bunch of fruit, 6 feet in length, and weighing 200 lbs., the shell of the fruit being covered with closely-imbricated scales, and is used as an ornament. The sugar called Jaggery in India is obtained by boiling the toddy.

Palma Christi (*Ricinus communis*), a tree of the Spurgewort family (Euphorbiaceæ), originally supposed to be a native of India, but now widely spread over the warm regions of the earth. In this country it makes a handsome summer plant, having an erect stem from 4 to 5 feet high, bearing large, broad, lobed leaves, the whole being of a rusty, dark green appearance. In

warmer countries, such as the South of France, it becomes a soft-wooded tree. The bruised seeds afford the well-known castor oil, the supply for this country being derived principally from India. The leaves have lately come into repute as food for a species of silkworm, and in some parts of Germany it is grown for that purpose. Castor oil appears to have been known to the ancients, as seeds of it have been found in the tombs of Egypt, supposed to have been 4000 years old. It is mentioned by Herodotus and Hippocrates about 400 years before the Christian era, and it was then (as it is now) extensively cultivated in these countries for its oil for burning.

Palmetto Palm (*Chamærops* or *Sabal Palmetto*), a fan-leaved palm, attaining a height of 10 or more feet, occupying large tracts on the Atlantic coasts of the Southern United States. It was adopted as the emblem on the banners of the Southern Confederation.

Palmetto, Royal, a name in Jamaica for *Sabal umbra-culifera*, a noble fan-leaved palm, attaining a height of 80 to 100 feet, with a circumference of 5 to 6 feet; native of a hot valley in Jamaica known as the Pedro Plains, where it abounds. Its tall naked stems, crowned with large fan-shaped glaucous leaves, form a grand aspect in nature. Its fruit is produced in branched panicles, consisting of large blackish berries like a small date, and the sweet pulp furnishes food for numerous kinds of birds. It is also known by the name of *big thatch* and *bull thatch*, and, as the name implies, it is used for thatching houses. Hats, ropes, mats, and baskets, are made of it. The trunk is smooth and externally hard, and of iron-like firmness, while the interior is soft and spongy. It is cut into lengths, and the soft centre being removed a hollow cylinder is thus formed which is used for many purposes. A noble specimen of this palm, 20 feet high, is to be seen in the Palm-house, Royal Gardens, Kew.

Palmetto, Saw (*Chamærops serrulata*), a decumbent-stemmed palm, attaining a height of 3 to 4 feet, having fan-shaped leaves, with edges of the segments sharply serrulate, as also that of the foot-stalk, spadix tomentose, shorter than the leaves.

Fruit, an ovoid oblong drupe of a dark colour, the size of an olive. It is a remarkable palm, forming a Palmetto scrub for hundreds of miles on the sea-coasts of Georgia, South Carolina, and Florida. Its density and sharp-edged leaves render it impossible for human beings to pass through it. The inhabitants make use of the leaves for thatching, and they are also collected for paper-making, and scrubbing-brushes are formed of the tough fibrous roots. The fruit, although sweet, cannot be called palatable; it contains a fixed and volatile oil, which is obtained from the expressed juice; when boiled in water the volatile oil is set free, filling the atmosphere for a great distance, and causing dizziness and headache. Many medicinal properties are assigned to it. This palm is by some botanists placed in the genus *Sabal*.

Palmite, a name in South Africa for *Prionium Palmita*, a remarkable plant of the Rush family (Juncaceæ); it is an aquatic; its leaves are serrate, 2 to 3 feet long, and about 1 inch broad at their base, successively produced in fascicles, their sheathing bases forming a firm stem, 3 to 4 inches in diameter, always submerged, its length, depending upon age, sometimes 8 to 10 feet long, generally found in a slanting direction according to the depth of the water; the leaves standing upright, and the surface of the water being covered with them, may be compared to a field of pine-apple plants crowded together. The flowers are small, produced in panicles, and differ but little in character from those of the common Rush. The stems, when cut into lengths and tied round, form brushes, and when broken up they may be used as a substitute for horse-hair. About twenty years ago an attempt was made to bring this plant into use for paper-making, but it did not answer.

Palmyra Palm (*Borassus flabelliformis*), a large fan-leaved palm, native of India and Ceylon. It has a cylindrical stem, attaining a height of 50 or 100 feet, bearing a crown of large fan-shaped leaves. It produces its fruit in bunches, each fruit being about 3 inches in diameter, with a pulpy covering, which is made into a kind of jelly. It is a toddy-yielding palm, and

large quantities of jaggery sugar are obtained from it. The young plants are used as a vegetable. The wood of its stem is hard, and employed for all manner of domestic purposes, and umbrellas and books are made of its leaves. It is represented in Central Africa by *B. æthiopum*, which is widely spread within the tropics; its fruit is somewhat larger than its Indian ally, but similar in form, and of a dark yellow colour. It consists of a fibrous, pulpy husk, of an agreeable odour and acid-sweet taste; it is eaten, or rather sucked, by the natives. The young seedling plants are used as a vegetable, in the same way as those of the last-named species are in India, but the sap of the palm is not extracted for making toddy, wine, or sugar. In Gambia it is called the Run Palm, and is considered to be the most valuable wood for building; it resists the attacks of the white ant, and remains sound under water for years; it is very hard, and takes a fine polish. Trees have been seen in Gambia 90 to 120 feet high, of which 80 feet or more of the trunk are perfectly clean, and somewhat swollen about half-way up.

Palo de Vaca. (*See* Cow Tree.)

Palo Santo, a name in Guiana for *Swartzia tomentosa*, a tree of the Cæsalpinieæ section of the Bean family (Leguminosæ), native of the forests of Guiana, where it attains a height of 60 or more feet, and upwards of 3 feet in diameter, supported at the base by 6 or 8 projecting narrow buttresses. Its heart wood is of a reddish colour, becoming black in old trees, and is very hard and durable. A juice exudes from the bark which hardens into a blackish resin. The name Palo Santo is also applied in Paraguay to *Lignum Vitæ*.

Pampas Grass (*Gynerium argenteum*), a strong-tufted perennial grass, with long, narrow, whitish leaves, producing naked culms 5 or 6 or more feet in length, bearing a dense head of spikes of numerous small flowers, which when perfect become white, and form an ornamental plume from 1 to 2 feet in length. It is a native of the grassy plains of South America, called Pampas. It is perfectly hardy in this country, and highly valued as an ornamental garden plant.

Panama Hats.—These are made from the leaves of *Carludovica palmata*, a plant closely allied to the Screw Pine family (Pandanaceæ), native of Panama, Ecuador, and other parts of Central America. It is a stemless species, with incised fan-shaped leaves, borne on erect foot-stalks 6 to 8 or more feet in length, rising from an underground cæspitose rhizome. The celebrated Panama hats and cigar-cases are made of the leaves, which form considerable articles of trade in hot climates.

Pansy. (*See Violet.*)

Papaw Tree (*Carica Papaya*), a fast-growing, soft-wooded tree, the type of the family Papayaceæ, averaging about 20 feet in height, the stem being gouty near the base, sometimes as thick as a man's body, terminated by a crown of large-lobed leaves on long foot-stalks, producing flowers from the stem, below the leaves. The fruit when ripe is of a yellow colour, 8 to 10 inches long, and either shaped like a vegetable marrow, or round like a melon. It is a native of tropical America; is common in the West Indian Islands; has been introduced into, and is now common in, India and other countries of the East. The tree, and even the fruits, are full of an acrid milky juice; it is, however, palatable when eaten with sugar, and is said by some to have the flavour of apricots; when the half-grown fruit is properly pickled, it is but little inferior to pickled mango. The most remarkable property of this tree is that the juice makes animal flesh tender very quickly when wrapped in the leaves or hung on the tree for a short time, or flesh boiled in some of the juice. It is said that by it the flesh of old fowls or hogs is quickly made tender. Taking into consideration all that has been written, there seems some difference of opinion respecting the wholesomeness of the Papaw; this may be probably owing to different varieties, or even to distinct species, two of which, from New Grenada, were some years ago grown at Kew. A good deal of attention has been given of late to the value of the Papaw in medicine, both in this country and on the Continent. *Carica spinosa* is a branching tree, 20 to 30 feet high, native of Guiana and Brazil. The juice is exceedingly acrid,

causing blisters to the skin, and is much dreaded. The fruit is not eaten, and its flowers have a carrion-like odour. It has some medical reputation as a remedy for enlargement of the spleen, and is valued as a cure for intestinal worms.

Paper.—For a notice of the plants that furnish the principal material for paper-making, see Bamboo, Banana, Esparto Grass, Flax, Indian Paper, Paper Mulberry, Straw, Papyrus, and Wood Paper.

Paper Mulberry (*Broussonetia papyrifera*), a small tree of the Mulberry family (Moraceæ), from 20 to 30 feet high, with rough, entire, or variously-lobed leaves. It is supposed to be a native of China and Japan, where it is extensively cultivated for its bark, which is made into paper. It is also widely spread throughout the islands of the Pacific Ocean, where the bark is beaten out by the natives, and made into Tapa cloth, which forms their chief article of dress; it is now, however, being superseded by Manchester goods.

Paper Reed. (See Papyrus.)

Papyrus (*Papyrus antiquorum*, better known as *Cyperus papyrus*), a strong-growing, perennial, rush-like plant of the Cyperus family (Cyperaceæ), supposed to be the Bulrush of the Nile, of which the ark of the child Moses, as also the vessels spoken of in Isaiah were made; but it appears to be of more ancient date, it being the plant from which the papyri or paper was made, and upon which the records found in the Egyptian tombs were written. It grows in the Lake of Galilee, and other parts of Syria, and is "the paper reed by the brooks." It has strong roots, or rather rhizomes, which grow in the mud, and throw up smooth triangular stems 6 to 10 feet high, and about an inch in diameter. The mode of making the paper appears to have been very simple: the reed or stem was first peeled, the pith cut lengthways into thin slices, which were laid side by side, their edges touching one another. These were then sprinkled with gummy water, or, as some say, with the thin muddy water of the Nile; a heavy press was then applied, and thus the whole became united into one piece, of greater length

or breadth according to circumstances. The sheet was then dried and cut into the required sizes for use.

Paraguay Tea, or **Yerba** (*Ilex paraguayensis*), a small ever-green tree of the Holly family (Aquifoliaceæ), with plain or toothed leaves; native of South America, in the countries of the Parana and Paraguay rivers. The leaves are either dried or scorched, and pounded, and become the tea, which forms an important article of trade in South America, taking the place of Chinese tea as used in other countries. It is infused in the same manner, but is drunk in a different way, being sucked through a tube called a bombilla; it is very refreshing after fatigue. Matè is the name of a small gourd, which forms the drinking cup. The quantity of this tea consumed in South America is calculated to be at least 8,000,000 lbs. per annum. Although such is the case, it has not yet met with patronage in this country.

Pareira Brava, a name given by druggists to the roots of *Cissampelos Pareira*, a climber of the Moonseed family (Menispermaceæ), native of the East and West Indies and Central America. It is in high repute, medicinally, in urinary diseases. It is also known as Portuguese Wild Olive. Though the name of Pareira Brava is commonly given to the above-named plant, it is more properly applied to *Chondodendron tomentosum*, an allied species. *Abuta rufescens*, another allied plant, furnishes White Pareira Brava.

Parsley (*Petroselinum sativum*), a biennial of the Carrot family (Umbelliferae), native of Sardinia, and has become wild in many parts of England. It is cultivated in all gardens for the sake of its finely-cut leaves, which are in common use in flavouring culinary dishes and for garnishing. Much superstition was early attached to the Parsley, and even at the present day in some parts of England it is considered unlucky to transplant Parsley.

Parsnip (*Pastinaca sativa*), a biennial of the Carrot family (Umbelliferae), growing in waste places, similar to the wild carrot in this country, and, like it, uneatable in its wild state,

but cultivated its roots become succulent, forming a nourishing and useful vegetable ; it is extensively cultivated in Jersey for feeding swine, and makes excellent pork. It contains sugar, and a kind of wine is made from it called Parsnip Wine.

Partridge Berry. (*See* Shallon.)

Partridge Wood, a common name for the wood of one or more not well ascertained trees. *Heisteria coccinea* is a tree 15 to 20 feet high, of the Olacac family (Olacaceæ), native of the West Indian Islands, particularly Martinique. The fleshy fruit affords abundance of food to pigeons and other birds, hence the French call it *Pois perdrix*, signifying Partridge Pea ; they also call it *Bois perdrix*, Partridge-wood ; it is, however, considered not to be identical with the Partridge-wood of commerce, which is, by some, supposed to be the wood of *Andira inermis*, a tree of the Bean family (Leguminosæ), native of the West Indies.

Passion Flowers.—*Passiflora*, the name of an extensive genus of climbing shrubs of the Passion-flower family (Passifloraceæ) ; there are about two hundred, the greater number of which are natives of Brazil and the West Indies, as well as other parts of tropical America, where they climb from tree to tree, interlacing in the most complex manner, and beautifying the scene by their showy flowers and fruit. (*See* Granadilla.) A few are found in North America, one or two in the East Indies, two in Norfolk Island and Australia. The stems of some of the climbers attain the thickness of the arm, and look like ropes ; their vascular structure is very open, containing a large quantity of water. A stem of *P. actina*, at Kew, when cut yielded nearly a gallon of clear water in about one minute. A great many are cultivated in hothouses for the sake of their showy flowers, and the common Passion Flower (*P. cærulea*) is hardy in the open air when trained against walls.

Patchouli, a name for *Pogostemon Patchouli*, an erect plant of the Mint family (Labiatae), growing to a height of 2 or more feet, having broad oval leaves 3 or 4 inches in length. The dry leaves have a peculiar perfume, and are extensively used for many purposes ; the scent of Patchouli was at one time

considered as a test of real Indian shawls, but since the knowledge of the perfume and the plant producing it have become known in this country they cannot be depended on, home-made shawls being scented with it and sold as real Indian ones. The leaves are also used as an ingredient in tobacco, and an essential oil is obtained from them and used as a toilet perfume. The Arabs in their pilgrimages take a great quantity of leaves with them, which are used in stuffing mattresses, pillows, etc., and are supposed to keep off contagious diseases.

Pea (*Pisum sativum*).—The garden pea is an annual tendrill climber, a native of the South of Europe. There are many garden varieties supposed to have originated from the grey or field pea. They are now universally cultivated in countries suitable to their culture, and form an important article of food. The split peas of the shops are the white peas split and divested of their skin. In Scotland grey peas are ground into meal, of which peameal bannocks are made ; a very nutritious food.

Peach (*Amygdalus persica*), a small tree of the Almond family (Drupaceæ). As its specific name implies, it is supposed to be a native of Persia, and to have migrated westward, appearing in Italy at the beginning of the Christian era, and in this country about the middle of the sixteenth century, and now extensively cultivated in all moderately warm countries of both the northern and southern hemispheres. For early crops of fruits it is extensively cultivated under glass in this country, and in the open air it comes to perfection when grown against walls. There are many varieties of the Peach, the skin of the fruit of which is downy, while that of the Nectarine, which is considered only a variety, is smooth ; there are instances, however, on record of downy and smooth fruits growing on the same tree. In North America the Peach is extensively cultivated ; in the United States it is grown in orchards, and in the season Peaches are as common in the towns of the States as strawberries are in London, and wine is made of them.

Peach, Palm, a name given by Humboldt to *Guilielma*

speciosa, a native of Venezuela and countries bordering the Orinoco, where it is called Perigas. It is a wing-leaved palm, and grows to a height of 50 or 60 feet, the stem being covered with sharp black spines. It is largely cultivated for its fruit, which is of the form of an egg, but larger; it consists of a sweet pulpy thick rind of a yellowish colour, and forms a considerable article of food for the natives.

Peach, Sierra Leone (*Sarcocephalus esculentus*), a strong climbing shrub of the Cinchona family, native of Western tropical Africa. The flowers are small, produced in terminal compact heads, each becoming a one-celled berry, the whole united forming a pulpy fruit about the size of a peach. It is eaten by the negroes, and known by the name of Negro Peach.

Pear Tree (*Pyrus communis*), a tree of the Apple family (Pomaceæ). In its wild state it is a small thorny tree, and, like the crab apple, considered to be a native of this country, as also many parts of Europe. Its history is similar to that of the apple; in Pliny's time 36 species are recorded to have been cultivated at Rome. By sowing the seeds of apples or pears, crab-trees are generally the result, but occasionally fruit-bearing trees of new kinds are produced. The number of sorts in British nurseries amount to about 100. Pear trees live to a great age, some are recorded 200 or 300 years old. The wood in old trees is hard and much valued by turners and cabinetmakers. The liquor well known as Perry is the fermented juice of pears.

Peccan Nut (*Carya olivæformis*), a tree of the Walnut family (Juglandaceæ), native of the south and western States of North America, the nut of which is considered a great delicacy. Small quantities are occasionally imported from New Orleans.

Pekea Nut. (See Souari Nut.)

Pelargonium. (See Geranium.)

Pellitory of Spain (*Anacyclus pyrethrum*), a perennial of the Composite family (Compositæ), native of Southern Europe, having much-divided leaves, and prostrate stems with white flowers. It is cultivated in Southern Europe and Northern

Africa for its roots, which are cut into short pieces, known in the shops under the name of *Radix Pyrethri*; they are very pungent, and are used medicinally, and for toothache. It first causes a sensation of cold, followed by heat.

Penang Lawyers (*Licuala acutifida*), a small fan-leaved palm, native of Pulo-Penang. Its stems are imported into this country, and after being dressed and polished are used as walking-sticks under the above name.

Peony, a genus of the Buttercup family (*Ranunculaceæ*), represented by *Pæonia officinalis*, a strong-growing perennial, having large double red flowers resembling the rose; it has by some been called the Hundred-bladed Rose; it is a native of Switzerland, cultivated in this country 300 years ago, and has now become a favourite in all gardens. *P. corallina* is considered to be a native of this country, but only found growing on a rock island at the mouth of the Severn. *P. Moutan*, the tree Peony, is an exception to the above, being a stiff-branched shrub, 3 to 4 feet high, with double flowers, of which there are now many fine varieties. It is a native of China, introduced in 1789. It is hardy in this country; but flowering early, it requires some slight protection at the time of coming into flower.

Pepper Plants.—About 40 species, more or less natives of the same or of different countries, are called Pepper plants. They consist of herbs, shrubs, and trees, and all possess in more or less degree aromatic, pungent properties, throughout the whole or some special part of the plant, and are used in their respective countries as stimulating food condiments, some forming considerable articles of trade. The most important in domestic use in this country are furnished by species of the genus *Piper*, the type of the family *Piperaceæ*. (See Pepper and Capsicum.)

Pepper, the well-known condiment prepared from the fruits of *Piper nigrum*, an epiphytal plant climbing and clinging to trees, having heart-shaped leaves about the size of ivy leaves, and producing flowers in spikes, followed by berries like currants, that are at first green, but after being gathered and dried become black, and form the Black Pepper of shops. White Pepper is

the same berry divested of its skin by rubbing and washing. Being ground they form the well-known condiment Pepper. It appears to have been early known, as it is mentioned by Theophrastus, who flourished 300 years before the Christian era. Long Pepper of the shops is the immature flower-spikes of *Piper longum*. In habit like the preceding, it is a native of India, and is extensively cultivated, especially in Bengal. Long Pepper spikes possess the same stimulating property as Black Pepper. Cubebs, the berries of *Piper officinarum*, now called *Cubeba officinarum*, is a native of Java, and its berries are also stimulant. It is probable that the above Peppers are produced by other species than those named, of which there is evidence, especially as regards the plants that produce the Black Pepper of Jamaica, Trinidad, and Ceylon; examples have been grown at Kew, each of which was sufficiently distinct in appearance to warrant their being characterised as species.

Pepper, African (*Xylopia aethiopica*), a shrub or small tree of the Custard Apple family (Anonaceæ), native of Western tropical Africa; its fruit consists of numerous carpels, about 2 inches in length, which when dry separate, forming a bunch; they are aromatic, and used by the natives as a stimulant; it is also known by the name of Guinea Pepper, Negro Pepper, and *Piper aethiopicum*.

Pepper, Bell. (See Capsicum.)

Pepper, Bird. (See Capsicum.)

Pepper Brand. (See Smut.)

Pepper, Cayenne. (See Capsicum.)

Pepper, Cherry. (See Capsicum.)

Pepper, Chinese and Japan (*Zanthoxylum piperita*), a bushy shrub with small winged leaves of the Yellow-wood family (Zanthoxylaceæ), native of China and Japan; it has berries about the size of black pepper, which are used as such in Japan. It has been introduced into this country and has flowered, growing against a wall at Kew.

Pepper, Jamaica. (See Allspice.)

Pepper, Melegueta. (See Grains of Paradise.)

Pepper Tree, California. (*See* Mastich.)

Pepper Tree of Tasmania (*Tasmannia aromatica*), a shrub, or rugged, distorted-branched tree, of the Magnolia family, native of Mount Wellington in Tasmania. It attains a height of 10 or 12 feet; the bark and leaves are aromatic. Its berry-like fruit is pungent, and is used as a substitute for pepper.

Peppermint (*Mentha piperita*), a creeping-rooted perennial of the family Labiatae, native of this country, generally growing on river banks and moist places. It is extensively cultivated here as well as in the United States for its fragrant oil, which is obtained by distillation. It is used as a stimulant, and for making a cordial called Peppermint Water.

Peppermint Trees of Australia.—*Eucalyptus piperita* and *E. amygdalina*, large trees of the Myrtle family (Myrtaceae), natives of New South Wales and other parts of Australia. They yield an essential oil, which is largely imported into this country. The wood is hard and durable. (*See* Eucalyptus.)

Perry. (*See* Pears.)

Persian Berries. (*See* Buckthorn.)

Persimmon Plum. (*See* Date Plum, American.)

Peruvian Bark. (*See* Cinchona.)

Pharaoh's Corn, supposed to be *Triticum compositum*, a wheat having several separate spikes to the ear. It is also called Mummy Wheat. It has been grown at Kew.

Physic Nut (*Jatropha Curcas*), a small tree of the Spurge-wort family (Euphorbiaceae), attaining a height of 20 feet, having soft spongy wood and entire or lobed leaves. It is a native of tropical America, and is now cultivated in all hot countries for its seeds, which yield an oil analogous to that of castor-oil, but of a drastic nature; it is used for many purposes. The seeds are nutty and pleasant to eat, but when eaten to excess produce serious consequences. A few years ago several children died at Bristol through eating them.

Pi, a name in the Sandwich Islands for *Tacca pinnatifida*, a perennial herb of the Taccaceae. It is cultivated throughout most of the islands of the Pacific, also in India and the Malayan

Islands generally. It has large fleshy tubers, which, after preparation by pounding and washing to rid them of their acidity, form an important article of food. The fecula or meal is equal to the best arrowroot.

Piassaba, the Brazilian name of a fibre obtained from *Attalea funifera* and *Leopoldinia piassaba*, two wing-leaved palms abundant in Northern Brazil. They have a very unsightly appearance on account of their old leaves hanging down and their stems being covered with loose shaggy strong fibre of a brown colour, which is collected, and forms a considerable article of trade, shiploads being imported into this country and used for making street brooms and for other like purposes.

Pig-nut, also called Hog-nut (*Carya porcina*), a tree of the Walnut family (Juglandaceæ), native of North America, chiefly in the middle and western United States. It attains a height of 70 to 80 feet, and a diameter of 3 feet at the base. Its wood is considered superior to the other species of *Carya*. Its nut is small, and is eaten by pigs. (See also Earth Chestnut.)

Pigeon Berry. (See Poke.)

Pigeon Pea (*Cajanus indicus*), a trifoliolate-leaved shrub of the Bean family (Leguminosæ), originally a native of India, but now cultivated in most tropical countries for the sake of its pea seeds. There are two varieties, one in Jamaica called the Pigeon and No-eye Pea, and the other variety called the Congo Pea. In all countries where it grows it forms an important article of food.

Pigeon Plum.—*Chrysobalanus ellipticus* and *C. luteus*, small trees of the Cocoa Plum family (Chrysobalanæ), natives of Western tropical Africa. Their fruits are succulent, and abundantly sold in the markets of Sierra Leone; one is called Yellow Pigeon Plum.

Pilewort (*Ranunculus Ficaria*), a perennial of the Buttercup family (Ranunculaceæ), native of this country and Europe generally. A pretty yellow early spring flowering plant, having heart-shaped leaves, not exceeding 3 inches in height,

growing abundantly in moist shady places. After flowering its leaves soon wither, and it remains dormant until the following spring. After heavy rains, however, its place is often well marked by numerous little tuberous roots lying on the surface like grains of wheat, which have been supposed by some to be corn fallen from heaven. This is particularly the case in Silesia, where they are gathered and used as food, being very mealy and not unwholesome when boiled.

Pine-apple (*Ananassa sativa*), a plant of the family Bromeliaceæ. The original country of this is supposed to be Brazil; it now exists in both a cultivated and wild state in all warm parts of America, and it has been introduced into Western tropical Africa, where it has become naturalised, as also in the warm parts of Asia and other tropical countries. Its fruit consists of a number of pulpy ovaries cohering in a firm compact head, and terminated by a tuft of small leaves termed the crown.

The Pine-apple appears to have been known in England in the time of Charles II., who is recorded as having at a royal dinner party first cut one up, of which the celebrated Evelyn, in his Diary, dated July 19th, 1668, says—"I was at a banquet which the King [Charles II.] gave to the French Ambassador. Standing by his Majesty in the presence there was of that rare fruit called the King Pine, growing in Barbados, in the West Indies. The fruit of them I had never seen. His Majesty, cutting it up, was pleased to give me a piece from his own plate to taste of; but in my opinion it falls far short of those ravishing varieties of deliciousness ascribed to it." About that time John Rose was royal gardener. Horace Walpole mentions in the catalogue of his collection at Strawberry Hill "a picture, probably by Dankers, of Rose the royal gardener presenting the first Pine-apple raised in England to Charles II., who is standing in a garden. The house seems to be Downey Court, near Windsor, the villa of the Duchess of Cleveland,"¹ to whom Rose

¹ There is a small-sized copy of this picture in the library of the Royal Horticultural Society, South Kensington, on which is the following inscription :—"King Charles II., and Mr. Rose the royal gardener pre-

was once gardener. There is, however, no proof of the said fruit having been grown in England, as it is recorded that the Pine-apple plant was first introduced into Holland from America about the middle of the seventeenth century; from thence it was brought to England by the Earl of Portland in 1690, being five years after the death of Charles II.

In 1712 it appears to have been successfully cultivated and fruited by Sir Mathew Decker in his garden at Richmond. Of this plant there is a painting in the Fitzwilliam Museum, Cambridge, of which the handbook says:—"Landscape, with a pine-apple, being the first that was grown in England, which was in Sir Mathew Decker's garden at Richmond, in Surrey, grandfather to the late Lord Fitzwilliam." From the above time its cultivation became very general, and hothouses—called pine-stoves—were erected for it. Pine-apples are produced in this country larger and superior in flavour to those of native growth. They were then only for the rich, but of late years large quantities have been imported from the West Indies, chiefly from the Bahamas, Azores, Trinidad, and other West Indian islands, and it is not uncommon to hear the cry of "Pine-apple, a penny a slice," in towns.

The name Pine-apple is given on account of the fruit resembling the cones of the pine or fir tree. In India, Burmah, and other parts, the tough fibre of the leaves is largely used in the manufacture of textile fabrics. It partakes of the character of flax, is of a silky nature, and may be spun into a very fine fabric.

Pine, Chili. (*See* *Araucaria*.)

Pine, Moreton Bay. (*See* *Araucaria*.)

Pine, Norfolk Island. (*See* *Araucaria*.)

Pine Trees.—Under fir trees it is stated that the genus *Pinus*, as originally characterised, comprehends species forming two natural groups differing in the attachment of the leaves, which, with other characters, has led modern botanists to sending the first pine-apple grown in England; drawn from the original picture in the collection of the Earl of Waldgrave at Strawberry Hill."

separate them under two distinct genera, *Abies* and *Pinus*, the first comprehending Fir Trees (which see), the second the species well known by the name of Pine Trees. In *Hortus Kewensis* (1813) 17 species are described; since then new discoveries, as recorded in books, have raised the number to between 80 and 90. They are all natives of the northern hemisphere, chiefly in the middle region of the temperate zone, where they form immense forests, both on plains and mountains, even extending to the Arctic Circle, where some are recorded to attain a height of 150 to 200 feet.

The greater number are natives of the American continent, 13 are native of Europe, and about 12 belong to Asia, including China and Japan. During the last fifty years nearly the whole of the American species have been introduced into this country, and, with the exception of the Mexican species, are hardy, some becoming fine trees. About twenty years ago a collection of Mexican forms was grown at Kew, making handsome conservatory plants, 6 to 12 feet high.

The wood of *Pinus* and their resinous products are of high importance in all the arts, and in some countries their nutty seeds form a considerable article of food to the natives. The following is a brief notice of a few of the principal species and their products:—

Pinus sylvestris, well known as the Scotch Pine (wrongly called Fir); this well-known tree has an extensive range throughout Europe and Northern Asia, forming extensive forests, such as may be seen in the north of Scotland. It varies considerably in height, in favourable situations growing to 100 feet. Its timber is white and hard, and is used for many purposes; it is imported from ports in the Baltic under the name of Riga and Norway timber. This Pine is extensively planted as a shelter to young oak plantations; the rearing them for that purpose forms an important part of the trade of many of the Scotch nurseries. In Aberdeenshire and other parts of the north of Scotland trunks of this Pine are found in peat-mosses, some to a considerable depth; they are perfectly sound, their preserva-

tion being no doubt due to the antiseptic nature of the peat and the resin they contain; they are used for various purposes, but chiefly split up into laths, which are fixed in a slanting position by the fireplace, and being lighted at the upper end, burn with a steady flame, giving light to the room; this use is especially noticed by Sir Walter Scott in the story, *Candles and Candlesticks*, related in his novel, *The Legend of Montrose*. The next important European Pines are the Cluster Pine (*Pinus Pinaster*), Sea Pine (*P. maritima*), and Stone Pine (*P. Pinea*), natives chiefly of the South of Europe, in favourable situations becoming large trees. On the sea-coast they are low and bushy, and are extensively planted on the west coast of Ireland, Normandy, and other places, for fixing the sands. The seeds of the latter are large and nutty, and where abundant are used as food. Corsican Pine (*P. Laricio*), native of Corsica and Southern Europe, mostly a fast-growing tall tree, in general appearance resembling the Scotch Pine. It was introduced into Kew about 1815 by the late celebrated botanist R. A. Salisbury, who, on return from an excursion in the South of Europe, brought a small plant of it in his carriage; it is now 70 to 80 feet high, the tallest tree in Kew Gardens. Of the nine or ten species native of the United States and Canada, two of the most important are the Pitch Pine (*P. australis*) and Frankincense Pine (*P. Tæda*), so named from the quantity of resinous fluid they contain, which is converted into turpentine, tar, and pitch. They are both natives of the Southern States. *P. australis* is extremely common, covering vast tracts, growing by roadsides, and occupying waste cotton-fields; it and the Scotch Pine yield the greatest quantity of tar and turpentine of commerce. In California and North-West America the species of *Pinus* are generally large trees, such as *P. Lambertiana*, *P. macrocarpa*, by some called *Coulteri* and *P. ponderosa*, some attaining a height of from 100 to even 300 feet; their timber forms an important article of trade in these countries, and steam saw-mills have been erected in the forests for converting them into what is termed lumber, and since the settlement of the white man in some localities whole

forests are fast disappearing. Their nutty seeds form an important part of the winter food of the native Indians, and their bark is even said to be used as food.

Piney Varnish. (*See Copal.*)

Pinguin, a name in Jamaica for *Bromelia Pinguin*, well known as the wild pine of Jamaica, a plant of the Pine-apple family (Bromeliaceæ); leaves numerous, 2 to 3 feet long, sword-shaped, curved, and rigid, with strong hooked spines on the margin, which, when the plants are closely grown together, form an impenetrable barrier to man and animals; a good fibre is obtained from its leaves, as also from *B. Karatas*, an allied species. Its fruit is the size of a plum, and is an excellent vermifuge.

Piper Æthiopicum. (*See Guinea Pepper.*)

Pipi, a name given to the astringent pods of *Caesalpinia pipai*, a plant of the Bean family (Leguminosæ), native of Brazil.

Pippul Tree, a name in India for *Ficus religiosa*, a bushy tree of the Mulberry family (Moraceæ), having small elliptical smooth leaves. It is a native of India, and one of the trees of Hindoo worship.

Pishamin, a name in Sierra Leone for the fruit of *Carpodinus dulcis* and *C. acidus*, shrubby climbers of the Dogbane family (Apocynaceæ). The fruit of the first is of a yellowish colour, about the size of a lemon, and is called the Sweet Pishamin, while that of the latter is somewhat smaller, and is called the Sour Pishamin. They are both pulpy, and, when cut, yield a quantity of sweet milky juice, which is also called Pishamin.

Persimmon Plum. (*See Date Plum.*)

Pistacia Nut (*Pistacia vera*), a small tree of the Cashew Nut family (Anacardiaceæ), native of Western Asia, common in Palestine, and has become indigenous in the Mediterranean region. It has shining, winged, evergreen leaves. Its fruit is of an oblong form, rather larger than an olive; it has a brittle shell enclosing the cotyledons (embryo), which are oblong and of a greenish colour and an agreeable flavour. They are eaten in large quantities by the Turks and Greeks, and are to be seen

in some of the Italian warehouses in London ; about 1300 cwts. are annually imported from Aleppo. They are considered by Bible commentators to be the nuts sent by Jacob into Egypt.

Pita, a name in many parts of tropical America for the fibre of the American Aloe (*Agave americana*), and other allied species. It forms the chief article of clothing of the natives, and ropes and whips are made of it.

Pitch. (See Pine Trees.)

Pitcher Plants, a common name for certain plants whose leaves, instead of being flat, are united by their edges, thus forming tubular or ursulate vessels of various forms and sizes, furnished with a lid, and capable of holding water ; their interiors are lined with hairs pointing downwards, by which insects are entrapped.

Pitcher Plant, Australian (*Cephalotus follicularis*), is a beautiful and singular little plant, growing in the form of a rosette about 3 or 4 inches in diameter, having small, narrow, spathulate leaves, alternate with which are foot-stalks bearing small pitchers, furnished with a lid attached on the inner side, and resembling a saucepan or goblet, the foot-stalk corresponding to the handle. The flowers are small, and borne on an erect stalk, 6 inches or more in height, forming a spike. It is a native of King George's Sound, South-West Australia, growing in marshy places like our sundews. It was introduced into Kew in 1823 ; it continues to be rare, and is considered more as a botanical curiosity. The plant is now put in the order Saxifragaceæ.

Pitcher Plant, Californian (*Darlingtonia californica*), a remarkable perennial herb of the Side-saddle Flower family (Sarraceniaceæ). This curious plant is a native of California, growing in marshes. The leaves rise in a fascicle from a crowned root-stock ; they are tubular, varying in length from 1 to 2 feet, the lower part nearly erect, widening upwards ; the upper part much wider, and abruptly bent downwards like an inflated hood or sac, terminated by a lateral two-parted lobe, which in the early stage closes the pitcher like a lid ; the inside of the hood

is furnished with short hairs pointing inwards; it contains a viscid fluid which entices flies to enter, and in consequence of the hairs pointing downwards they are imprisoned, in some cases filling the pitchers half full of dead insect-matter. It is a common custom to place the pitchers in dwelling-houses as fly-traps. The whole of the pitcher is of a dingy orange colour, marked with strong veins; the flowers are solitary and drooping on the apex of the flower-stalk, 2, 3, or 4 feet high, and when fully expanded are about 2 inches in diameter, straw-coloured.

Pitcher Plant, Guiana (*Heliamphora nutans*), a perennial herb of the same family as the preceding, the leaves of which rise from a crowned root-stock tubular, in the form of a vase with an oblique mouth, the inside lined with glandular hairs. Flowers, generally more than one, are produced on an erect stalk, white or pale rose colour. It is a native of Guiana, growing in marshes and muddy places.

Pitcher Plant, Indian (*Nepenthes*), the only genus of the family Nepenthaceæ. It contains about 20 known species of smooth, slender-stemmed, trailing or climbing plants, holding by their twisted leaf-stalks. They have alternate leaves, each of which is formed of three distinct parts, the lower part in the form of a strap-like leaf, with a thick midrib, varying in length in the different species from a few to even 12 or 18 inches, and in breadth from an inch to a foot; from the apex of this leafy part the midrib is prolonged in the form of a foot-stalk, varying from a few to 20 inches in length. This midrib performs the part of a tendril, from the apex of which rises a variously-formed vessel, ranging in size from a few inches to a foot in length and 6 inches in diameter, capable of holding more than a quart of water (*N. Rajah*). This is called the pitcher, and in its early state is closed with a lid, which ultimately opens, the pitcher having an exact resemblance to a water-jug with a lid. As already stated, the pitchers vary considerably in size and form, and are either plain or furnished with wing-like appendages on one side, the whole being green, or, as in *N. Rafflesiana*,

N. Rajah, and others, highly coloured. They are beautiful and interesting objects, and are highly prized by amateur cultivators of rare plants. They are widely distributed, being found in Ceylon, India, Malayan Peninsula, Borneo, and islands of the Indian Archipelago in general. The first known species, *N. distillatoria*, native of Ceylon, was introduced in 1789. A few years ago a plant at Kew attained the length of between 30 and 40 feet, the lower part of the stem becoming naked, and the upper part bearing abundance of pitchers.

Pitcher Plant, North American. (See Side-saddle Flower.)

Pituri, a name given by the natives of Australia to *Duboisia Hopwoodii*, a shrub of the Figwort family (Scrophulariaceæ), but by some considered to be related to the Atropine section of the Deadly Nightshade family, which its narcotic properties seem to warrant. It is stimulating, and its leaves are chewed by the natives, the same as the betel nut in India, coca leaf in New Grenada, and tobacco in other countries; they consider it to make them courageous and strong in battle. Experiments made by Dr. Bancroft prove it to be a most dangerous poison, acting on the respiratory system, producing shivering and convulsions.

Piwarrie. (See Cassava.)

Plane Tree, Eastern (*Platanus orientalis*), the type of the Plane Tree family (Platanaceæ), attaining a height of from 60 to 80 feet, and when standing singly has wide-spreading branches. It is well known in parks and gardens in this country as a highly-ornamental tree. It is conspicuous in the vicinity of Mount Lebanon, one near Damascus measuring 40 feet in circumference. The Western Plane (*P. occidentalis*) is a tree attaining a large size, native of North America. In this country it is often injured by the spring frosts, and in the year 1811 many trees of it were killed in Scotland and in England. *P. acerifolia*, believed to be a distinct species, is much grown about London as the Oriental Plane; it differs in its leaves not being so deeply cut, and it is less disposed as in the true Plane to branch horizontally. *P. racemosa*, native

of California, *P. Lindeniana*, and *P. mexicana*, of Mexico, are said to be distinct species. Plane Tree wood is much prized by cabinetmakers, as it takes a fine polish.

Plane Tree, Scotch, a general name in Scotland for the different species of the genus *Acer* or Maple.

Plantain (*Musa paradisiaca*) and **Banana** (*M. sapientum*), perennial herbs, having long, vertical, sheathing leaf-stalks overlapping one another, forming soft stems, 4 to 15 or more feet high; from the top of the sheath broad leaves expand 6 to 10 feet in length; the fruit is produced in a bunch from the top of the sheathing stem, each bunch weighing 40, 60, or even more pounds. The Plantain and Banana are by some supposed to be two distinct species, but their numerous varieties seem to defy the limits to which of the species many of the forms belong. As food plants they have been cultivated in all ages throughout the tropics, and are now so thoroughly universal that it is extremely difficult to assign any place as their native habitat. They produce food for millions of people, far surpassing in quantity that of any other plant in proportion to the space it occupies. It has been calculated that the same area required to yield 33 lbs. of wheat, or 99 lbs. of potatoes, will produce 4400 lbs. of Plantains.

The young fruit surrounds the flower-stalk or spadix in clusters, and when ripe is of a yellow colour. Each fruit is from 6 to 8 inches long, and 4 to 5 inches in circumference. It is of a soft pulpy nature and agreeable flavour, being moreover highly nutritious. The Banana is eaten fresh when ripe, but the fruit of the Plantain is roasted and eaten before it attains its full maturity. In general the stems of Bananas rise 10 to 15 feet high, and are liable to be injured or even destroyed by high winds; a remedy for this has, however, been found in *Musa chinensis*, which is also cultivated under the name of *Musa Cavendishii*, the stems of which are rarely more than 4 to 5 feet high and very stout. This last variety has been successfully introduced into the Navigator's, Fiji, and other islands of the Pacific, and is much valued by the natives on account of its

productiveness. The stems of the different kinds of *Musa* contain a quantity of fibre, and various machines have been invented for its extraction. It is woven into textile fabrics, and paper is also made of it. The most important fibre-yielding species is *Musa textilis*, known as Manilla Hemp (*see* Hemp).

Bananas grow and fruit freely in hothouses; bunches from 50 to 60 lbs. weight have been produced at Kew, and fruit as large and fine-flavoured as that produced in the tropics.

Plum (*Prunus domestica*), a middle-sized tree of the Plum family (Drupaceæ). In this country it is found in a wild state, and it is also common throughout Europe and the temperate regions of Asia. It is by cultivation that the numerous fine varieties have been obtained, such as the Magnum Bonum, Blue-gage, Green-gage, Golden-drop, Imperatrice, Orleans, and many other sorts—all fine dessert fruits, more or less cultivated in most temperate countries. The kinds called Damsons and Prunes are black, and are extensively used for preserving, the latter in a dried state coming to this country from Portugal and France under the name of Brignole Prunes. The wood of the Plum tree is hard, close, compact, beautifully veined, and takes a fine polish.

Plum, Australian, Black and Grey, names in Australia for the fruits of *Cargillia arborea* and *C. australis*, lofty, hard-wooded trees of the Ebony family (Ebenaceæ). *C. arborea* is a native of Queensland, attaining a height of 100 feet; the fruit is about the size of a plum, of a grey colour, and eaten by the natives. *C. australis* grows in the Illawarra district of New South Wales; it is not such a large tree as the preceding; it is slender-stemmed, attaining a height of 30 to 40 feet; the wood is close-grained and useful for many purposes; the fruits are the size of a large plum, and of a dark purple colour.

Plum, Blood, the name of the fruit of *Hæmatostaphes Barteri*, a small tree of the Cashew Nut family (Anacardiaceæ), native of Western tropical Africa. It has winged leaves, and long panicles of small white flowers. The fruit is about the size of a plum, of a deep crimson colour; it is acid, but not unpleasant, and is eaten by the natives.

Plum, Grey. (*See* Gingerbread Plum.)

Plum, Indian.—*Flacourtia cataphracta* and *F. Ramontchi*, shrubs or small trees, more or less spiny, with small alternate leaves, belonging to the Indian Plum family (Flacourtiaceæ), natives of India and Madagascar. The fruit of the latter is about the size of a plum, of a sharp but sweetish taste. *F. sepiaria* is a stiff, spiny bush, used for making hedges in India. It has a pleasant, refreshing, sub-acid fruit.

Pohutukawa, a native name for *Metrosideros tomentosa*, a native of New Zealand, a remarkable tree of the Myrtle family (Myrtaceæ), growing on the bare rocks of the shore, especially on the Northern Island. It sometimes grows 4 to 5 feet in diameter, but is then often crooked and misshapen. Its wood is hard, like rosewood, and takes a fine polish, but is difficult to work, as it breaks the edges of tools.

Poison Bulb (*Hæmanthus toxicaria*), a bulbous plant of the Narcissus family (Amaryllidaceæ), native of the Cape of Good Hope. It is poisonous, and it is said that the Kaffirs use it to poison their arrows.

Poison Oak. (*See* Sumach.)

Poke (*Phytolacca decandra*), a strong-growing, herbaceous plant of the Bloodberry family (Phytolaccaceæ), 3 or 4 feet high, having bunches of dark-purple berries, the juice of which resembles red ink. It is a native of the Southern United States, where the plant is used medicinally; the young shoots on being boiled lose their acidity, and are then eaten as a vegetable. It is also called Pigeon-berry, and once had great repute as a cure for cancer.

Pollard. (*See* Bran.)

Polish Mushroom, a name given on the Continent to *Boletus edulis*, an eatable fungus growing in woods.

Polyanthus, a familiar name for *Primula elatior*, a perennial herb of the Primrose family (Primulaceæ), native of this country, but rare; also known by the name of Oxlip. It derives its name from the Greek words *poly* (many) and *anthus* (flowers), its flower-stalk bearing many erect flowers in the

form of an umbel, thus differing from the primrose, which is one-flowered; there are many fine varieties cultivated by amateurs. Polyanthus having become a familiar English name, must not be confounded with the genus *Polianthes*, which means city-flower. (*See* Tuberose.)

Polypody, an ancient name for *Polypodium vulgare*, a fern common in this country and throughout Europe, growing on trees, rocks, old walls, etc. By the ancients and our old herbalists many medicinal virtues were ascribed to the common Polypody. In some countries it is used as a cure for ringworm, and in this country an infusion of the fresh rhizome (creeping stem) is still regarded as a mild laxative, and is occasionally used as a remedy for colds and coughs. Its fronds yield carbonate of potash.

Pomegranate (*Punica Granatum*), a bushy deciduous tree, 20 to 30 feet high, of the Myrtle family (Myrtaceæ), native of Northern India and Western Asia, extending westward to the countries of the Mediterranean. It has been long cultivated in Spain and other countries of the South of Europe, and is also abundant in the West Indies and America. The fruit is usually about as large as a full-sized apple, having a hard rind of a yellowish colour; it contains a pulp which is highly prized for making cooling drinks. In Persia a wine is made from it in sufficient quantities for exportation. The rind, as well as the flowers, is used medicinally as a powerful astringent. The former contains a large quantity of tannin, which is used in the manufacture of morocco leather. A decoction of the bark and root is a powerful remedy for tapeworm. The Pomegranate is recorded as being introduced into this country in 1548. It grows freely under the protection of walls, but suffers in severe winters. In January 1838 all the trees in the neighbourhood of London were killed to the ground. The Pomegranate is of ancient renown, being mentioned in the Bible as one of the fruits of the Land of Promise, and is also described by Theophrastus 300 years before the Christian era.

Pomeloes. (*See* Shaddock.)

Pondweed, Choke (*Anacharis Alsinastrum*), an aquatic of the Frogbit family (Hydrocharidaceæ), with leaves like chickweed, arranged three in a whorl on long, slender, floating stems, which are densely matted together. It is a native of North America, and about forty years ago made its appearance in this country, spreading so rapidly that it was feared it would choke up the canals, and so prevent navigation. It, however, forms such dense masses that it ultimately becomes exhausted, and dies out.

Pool-rush. (See Bulrush.)

Poonga Oil, a name in India given to the oil expressed from *Pongamia glabra*, a tree of the Bean family (Leguminosæ), very generally diffused throughout Southern India, Malacca, Indian Archipelago, Southern China, North Australia, and Fiji Islands. It is a wing-leaved, middle-sized tree; its fruit (pod) from one to one and a half inches long and one inch broad, flattened, roundish, thick, and hard, containing a thick, kidney-shaped seed, which yields an oil, used by the common people for burning in lamps; and it is also used in medicine. It is of a yellowish-brown colour, and congeals at a temperature below 60° Fahr.

Poplar (*Populus*), the name of a genus of trees of the Willow family (Salicaceæ), of which there are a considerable number of species widely distributed, chiefly throughout the north temperate zone. About 15 species are recorded as being cultivated in this country, of which the following are the principal, the four first being natives:—*P. alba*, the great White Poplar, or Abele tree, and *P. canescens*, the Grey Poplar. They are common in other parts of Europe and in the Caucasus and Persia. The timber of *P. alba* is soft, and but little used, except for toys and such work; that of *P. canescens* is harder, and is used by millwrights, and being light is used for the handles of brooms, etc. *P. nigra*, the Black Poplar, is of rapid growth, attaining a height of 30 to 40 feet in ten years; the wood is yellow, fibrous, and soft. *P. tremula*, the Trembling Poplar, or Aspen, is an erect, slender-branching, somewhat pyramidal deciduous tree,

attaining a height of 40 to 50 feet. Its leaves are nearly round, thin and smooth, alternate, and obliquely attached by a slender foot-stalk, which allows them to move freely in a quivering manner, even when the air is still, and their rustling against one another makes an audible noise, which may be heard at some distance. This rustling noise is considered by Bible critics to explain the words, "When thou hearest the sound of a going in the tops of the mulberry trees," etc. (2 Samuel v. 23, 24). As the leaves of the mulberry are stiff and rigid, and do not rustle against one another like those of the Poplar, and also as there is no evidence to show that mulberry trees grew in Palestine in the time of Samuel, it is therefore considered that the Hebrew word (*becaim*) should have been translated Poplar, not mulberry.

P. fastigiata, the Lombardy Poplar, is an erect-branched tree of a pyramidal form, attaining a height of 50 to 100 feet. It abounds in Italy, but is believed to be a native of Northern and Western Asia; in this country it is planted as an ornamental tree, but is often injured by the frost of severe winters. Some years ago some fine trees were to be seen about London; their places are now occupied by buildings. *P. balsamifera*, native of North America, is called Tacamahac Poplar, and in this country Balsam Poplar; it attains a height of 40 to 50 or more feet; the buds and young shoots are viscous, the whole of the tree possessing a fine balsamic odour. *P. monilifera* is said to be a native of North America, but its habitat is uncertain; recorded to be introduced into this country in 1772. It is said to attain a great height, even to 100 feet. It is common in Italy, which has led to its receiving the name of Black Italian Poplar.

Poppy, Red, or Corn (*Papaver Rhœas*), one of our most beautiful British annuals; it must nevertheless be viewed as a troublesome weed. It is a great ornament to our cornfields, often making them appear while in flower one blaze of red. A syrup is prepared from the petals used in medicine, and a colouring matter used in the preparation of red ink.

Poppy, White (*Papaver somniferum*), an annual of the Poppy family (Papaveraceæ), attaining a height of 3 feet, having large, single, white or pink flowers. Its native country is not known, as it has been cultivated from the most remote ages, and was early known in Italy and Greece. It has long been extensively grown in India for its milky juice, which is obtained by scarifying the capsules when fully grown but in a green state. The juice soon hardens, and is scraped off, formed into balls, and called Opium, from which morphia is obtained. The highly medicinal properties are well known, and when used with judicious care it is one of the most valuable medicines known to man. Opium is, however, more extensively used for inducing narcotic intoxication by smoking or chewing, particularly in China, Turkey, Persia, India, and Siam, and to some extent in England. This pernicious custom when carried to excess is fatal to health, even causing madness. The capsules, or poppy-heads, are dried and employed in fomentations, and a syrup is prepared from them for use as a cough medicine. Opium forms one of the ingredients of Godfrey's Cordial. The seeds are perfectly free from any narcotic principle. A fine clear oil, nearly equal to olive oil, is obtained from them, which is used as a salad oil in India as well as on the Continent, where it is expressly grown for that purpose. It is but sparingly cultivated in this country for its heads, the seed being the maw-seed given to cage-birds.

The Government of China, being desirous to prevent the use of Opium, in 1839 destroyed a great quantity, the property of British merchants, which led to the first war with that country; the result being the opening of that great empire, as also Japan, to the trade and commerce of the world. [*The Poppy, therefore, with the tea, sugar, tobacco, and cotton plants, has been an important agent in changing the political and social conditions of nations. An import duty on tea led to the separation from the British Crown of the North American Colonies, which have become the great Republic of the United States. The cultivation of sugar, tobacco, and cotton in America and the West Indies*

laid the foundation of the slave trade, with all the horrors that have attended it.]

Porcupine-wood. (See Cocoa Nut.)

Portugal Laurel (*Prunus* [*Cerasus*] *lusitanica*), a wide-spreading, evergreen shrub or short-stemmed tree, seldom exceeding 20 feet in height, belonging to the Cherry group of the Plum family (Drupaceæ). It is a native of Portugal and Madeira, and was introduced into this country in 1648; it is very generally planted as an ornamental shrub. In severe winters it is often injured; the frost of January 1838 destroyed the whole of the plants at Kew.

Potato (*Solanum tuberosum*), a perennial of the Nightshade family (Solanaceæ). This well-known esculent is a native of Peru and Chili, and has also been found wild in Mexico. It was first introduced into Spain about the beginning of the sixteenth century, and into England from Virginia by Sir Walter Raleigh in 1586. Gerard, in his *Herbal*, published in 1597, gives a figure of a potato plant which he had had growing in his garden in Holborn (London), under the name of *Batata virginiana*,¹ and says it should be eaten as a delicate dish, not as common food. Parkinson (1640) says the tubers were roasted, and steeped in sack or sugar, or baked with marrow and spices, and even preserved candied by the comfit-makers. The cultivation of the Potato spread very slowly. About 1633 it was encouraged by the Royal Society; but it was not until nearly a century had elapsed that it became plentiful, and was successfully cultivated in Scotland. It is singular that in *The Complete Gardener*, published by London and Wise in 1719, the Potato is not mentioned, and about the same time Bradly, an extensive writer on horticultural subjects, speaks of it as being inferior to radishes. During the last hundred years the cultivation of the Potato has greatly increased in importance, especially in poor and densely-populated districts. The ravages of a potato-disease, which first appeared in 1845, produced a famine, especially in

¹ In Spain called *potades*, in Italy *potate*; hence comes our word *potatoes*.

Ireland, where Potatoes had for years been almost the sole article of food with the poorer class. Since that period, and on account of this disease, the crop has been uncertain throughout all countries.

Besides the usual culinary purposes for which Potatoes are used, a large quantity of starch is manufactured from them, equal to arrowroot, and used for many domestic purposes. It enters largely into the composition of wheaten bread, sometimes even to excess. From the starch a gum is obtained called Dextrine, which is used in the arts. The Potato yields by distillation a strong spirit, and by fermentation a wine is obtained; the spirit in flavour resembles brandy. Consequent on the disease of late years deteriorating the crops in this country, and the supply falling short of the demand, large quantities are imported, chiefly from France, the weekly consumption of London alone being equivalent to 500 tons. The quantity of baked Potatoes sold by vendors in the streets is estimated at 60 tons weekly between September and April. The disease is caused by a microscopic fungus called *Peronospora infestans*, which rapidly spreads over the plant, whole fields becoming black in a night; its mycelium enters the tubers, causing them to soften and rot. Much has been written on this disease, and rewards offered for its prevention or cure, but hitherto without any satisfactory result.

Pottery Tree (*Moquilea utilis*), a plant of the Cocoa Plum family (Chrysobalanaceæ), consisting of tall trees, natives of the forests of Brazil and Guiana. Spruce describes them as straight, slender trees, 100 feet in height. The bark is very hard and brittle, and contains a great quantity of silica, which the Indians obtain by burning the bark, and mixing the residue with clay to form pottery-ware vessels to stand fire heat. In Trinidad the bark of a species of *Hirtella*, *H. silicea*, a genus of the same family, is used for similar purposes. Specimens of the bark and of the vessels made from these pottery trees may be seen in the Museum in Kew Gardens.

Prairie Turnip (*Psoralea esculenta*), a tuberous-rooted herb

belonging to the Bean family (Leguminosæ), attaining a height of 2 feet, having winged leaves. It is common in some of the United States and in North-West America. Its tuberous roots form a considerable article of food to the native population, but it is rather insipid.

Prangos (*Prangos pabularia*), a perennial of the Carrot family (Umbelliferae), having a stem a few feet in height, with finely-divided leaves, and umbels of yellow flowers. It is a native of Tibet, where it is extensively used as a fodder for sheep, goats, and oxen ; they are very fond of it, and soon get fat upon it. It is not so much esteemed in Cashmere, where grass is more abundant than in Tibet. About 1840 it came into special notice in this country under the name of hay, and attempts were made to introduce it as a forage-plant, but it did not succeed.

Prickly Pear. (*See* Indian Fig.)

Pride of India. (*See* Bead Tree.)

Primrose (*Primula vulgaris*), a perennial herb of the Primrose family (Primulaceæ). This, with the Cowslip (*P. officinalis*) and Oxlip (*P. elatior*), are natives of this country, and in general favour as early spring flowers. (*See* Polyanthus.) *P. chinensis*, native of China, was introduced about forty years ago. Of this there are now many fine varieties, with double flowers, varying in colour from pink to pure white. It is extensively cultivated by florists as a decorative plant, as is also the more recently introduced species *P. japonica*. *P. sikkimensis*, and other showy species, native of the Himalayas, have been recently introduced. *P. villosa*, *P. marginata*, *P. integrifolia*, *P. calycina*, *P. helvetica*, and *P. Auricula* (*see* Auricula), natives of Switzerland, are favourites with cultivators of alpine plants, to which may be added *P. farinosa* and *P. scotica*, natives of this country.

Privet, also known by the name of Prim, a bushy, simple-leaved shrub of the Olive family (Oleaceæ), native of this country, and generally throughout Europe. It seldom exceeds 8 to 10 feet in height ; its wood is hard, and although small is used in turnery. It is much planted in this country as an ornamental plant, and for forming hedges where strength is not

required. It bears pruning and clipping with impunity. Its fruit is a small, black berry, produced in bunches; the juice is said to be used for painting playing-cards and also for colouring port wine. A bitter extract called Ligustrine is obtained from the bark; it also contains tannin.

Protea, the Linnæan name of a genus, the type of the Protea family (Proteaceæ). It consists of 40 to 50 species of shrubs and small trees, with alternate, entire, smooth or villose leaves, varying from linear to oblong, elliptical, and cordate. Flowers in terminal heads, composed of numerous tubular florets (calyx), surrounded by oblong imbricated bracts, similar to the flowers of the Composite family (Compositæ), in *P. longiflora*, *P. grandiflora*, *P. speciosa*, *P. formosa*, and *P. mellifera*. The flowers are large, 3 to 4 inches in length, firm and imbricated, forming a cup, which in *P. mellifera* contains a large quantity of honey. (See Honey Flowers.) They are all, with the exception of *P. abyssinica*, natives of South Africa. Twenty-three species are recorded in the second edition of *Hortus Kewensis* (1813), which for many years formed a part of the great collection of Proteaceæ at Kew.

Prune. (See Plum.)

Puchurim Bean. (See Nutmeg.)

Pudding Berries (*Cornus canadensis*), a herb of the Dogwood family (Cornaceæ), common throughout the whole of North America. An allied species is *C. suecica*, called Dwarf Cornel. It is smaller than the preceding, seldom exceeding 6 inches in height. It is a native of the North of Scotland and the North of Europe generally. The berries of both are used as food, especially by the Esquimaux.

Pudding Pipe, a name given in Jamaica and the West Indies to *Cassia fistula*, sometimes called *Cathartocarpus fistula*, a small wing-leaved tree of the Bean family (Leguminosæ), producing abundance of yellow flowers, native of the East Indies, and now common in most tropical countries. It produces a smooth cylindrical pod twice the thickness of the finger, and sometimes two feet in length. The interior is divided

into numerous transverse partitions, each containing a seed embedded in pulp, of a sweet taste, which forms an important laxative medicine. The leaves, as also those of *C. elata*, are used as a cure for ringworm.

Puff Ball (*Lycoperdon bovista* and *L. giganteum*), globular, stemless fungi, generally growing in pastures. The chief specific difference of the two is in their respective sizes, which varies from a few inches to a foot or more in diameter, sometimes weighing as much as six pounds. They are of a brown colour. When perfectly ripe, on being pressed with the hand or trodden upon, they emit their spores in a dust-like cloud resembling smoke. From this circumstance they are called The Devil's Snuff-box. While young, in their solid state cut into slices and fried with butter, they form a delicately flavoured wholesome dish. The allied genus *Bovista*, of which there are two species native of Britain (*B. nigrescens* and *B. plumbea*), are similar to the puff ball in form, but much smaller, and discharge their dust-like spores from the top of their papery skin. They are common in dry pastures.

Pulas, a name in India for *Butea frondosa*, a tree of the Bean family (Leguminosæ), native of Bengal, attaining a height of 30 or 40 feet. Its leaves are trifoliate, and covered with a velvety down. Its flowers are produced before the leaves. Each flower is about 2 inches long, and of a bright orange-red colour, and when the tree is in full flower is a splendid sight, the masses of flowers resembling sheets of flame. It furnishes several useful articles, the most important being a kind of kino gum, which exudes from the bark on its being wounded. In order to distinguish it from the kino produced from *Pterocarpus marsupium*, it is called Butea Kino, or Gum Butea. It is also sometimes called Bengal Kino. It is chiefly employed by the natives for tanning leather. It has been tried in this country, but the colour it imparts to the leather is considered objectionable. The flowers produce a beautiful bright yellow or deep orange-red dye; but it is not permanent. A coarse fibre of the bark of the stem and roots is used for caulking boats.

The lac insect, a kind of coccus, frequents the tree, and by its punctures in the young shoots produces stick lac. The seeds produce a small quantity of oil called Moodooga Oil. This tree is also called by the name of Dhak.

Another species is *B. superba*. It differs from the preceding, being a climber. Its leaves and flowers are similar to the last; as also its products.

Pulque. (*See Aloe, American.*)

Pulse, a general name for the pods and seeds of peas, lentils, etc.

Pulu, the name applied to the fine silky hairs that cover the upper part of the stem and base of the stipes of *Cibotium Menziesii*, *C. Chamissoi*, and *C. glaucum*, tree-ferns of the tribe *Dicksonia*, natives of the Sandwich Islands. Some years ago large quantities of these hairs were collected, and shiploads were sent to Australia and used for stuffing cushions and beds, but it has fallen into disuse.

Pumpkin (*Cucurbita maxima*), a trailing annual plant of the Gourd family (Cucurbitaceæ), producing the largest fruit of any known plant, some having been grown in this country weighing from 200 to 240 pounds, and measuring from 6 to nearly 8 feet in circumference. They are wholesome, and when young are by some used as a vegetable.

Puriri, a name in New Zealand for *Vitex littoralis*, a tree of the Vervain family (Verbenaceæ), attaining a height of 50 to 60 feet. Its wood is hard and dark brown, much used in all kinds of work. It is also called New Zealand Teak.

Puya, the name of a genus of the Pine-apple family (Bromeliaceæ), represented by *P. chilensis*, which has a palm-like stem 2 to 4 feet high, according to age. It has long recurved leaves, armed with hooked spines; native of some parts of the coast of Chili, where it forms impenetrable thickets miles in extent; its leaves contain fibre. (*See also Grass Cloth.*)

Quamash (*Camassia esculenta*), a bulbous plant of the Hyacinth section of the Lily family (Liliaceæ), with blue or white flowers. It is a native of North America, where it is very

abundant, and its bulbous roots form a large proportion of the vegetable food of the Indians.

Quandang Nut (*Santalum acuminatum*), a tree of the Sandalwood family (Santalaceæ), attaining a height of 20 or 30 feet, having a drupaceous fruit which is used as a preserve, and may be considered one of the few native fruits of Australia worthy of the name of fruit.

Quassia (*Quassia amara*), a small tree of the family Simarubaceæ, native of Surinam and Guiana, from whence it has been introduced into the West Indies. The generic name *Quassia* is derived from a negro named Quassi of Surinam, who employed the wood with uncommon success as a secret remedy in the malignant endemic fevers which frequently prevailed in Surinam. He sold the secret to Daniel Rolander, a Swede, who, in 1756, brought specimens of the wood to Stockholm, and shortly afterwards it became highly extolled throughout Europe, and it has been prescribed by numerous eminent doctors as an excellent tonic. The whole plant—root, wood, and bark—is intensely bitter, and possesses highly antiseptic properties. On account of its bitterness it has been used by brewers as a substitute for hops. The bitterness of the Surinam Quassia is, however, superseded by the Jamaica Quassia, *Picroena excelsa*, a tree of the same family, common in the lowlands of Jamaica, attaining a height of 50 to 60 feet. The Quassia wood of the shops is now principally the produce of this tree. Its medical qualities are the same as those of the Surinam Quassia. The bitter cups sold a few years ago in curiosity shops are made of this wood, and water allowed to remain in the cup for a short time becomes bitter. An infusion of Quassia chips destroys flies. Another bitter tree of this family is *Simaruba amara*, a tree attaining a height of 20 feet, native of the West Indies and Guiana. The bark is extremely bitter, and is used in the form of a decoction in many complaints.

Quebracho, Red (*Loxopterygium Lorentzii*), a tree of the Cashew Nut family (Anacardiaceæ), native of Colorado and Mexico. It is said to possess the same properties as the following.

Quebracho, White, a name in South America for *Aspidosperma Quebracho*, a tree of the Dogbane family (Apocynaceæ), native of the province of Santiago in Chili, where its bark has been used for many years as a febrifuge instead of Cinchona. Recently it has received a good deal of attention in this country as a remedy for diseases of the respiratory organs. The bark contains an alkaloid called Aspidospermin.

Quercitron. (*See Oak.*)

Quillaja Bark (*Quillaja Saponaria*), a tree attaining a height of 50 to 60 feet, native of Chili, belonging to the wing-seeded section of the Rose family (Rosaceæ), having smooth, shining, oval, green leaves, about $1\frac{1}{2}$ inch in length, and terminal white flowers. The bark is called Quillaja or Soap Bark, and consists of numerous layers, containing much carbonate of lime and other mineral matters, which renders it so heavy that it sinks in water. It is in common use in Chili instead of soap. Some years ago it was introduced into this country and recommended as a substitute for soap, especially for washing printed goods, silks, and delicate-coloured fabrics. An extract has been prepared under the name of Quillai Bark Oil, and sold by hairdressers for promoting the growth of the hair.

Quince Tree (*Cydonia vulgaris*), a low, spreading, branched tree of the Apple family (Pomaceæ), native of the temperate zone of Europe and Asia. It appears to have been early cultivated by the Greeks and Romans. Pliny says it was first introduced to Italy from Crete, and into this country about the end of the sixteenth century. The fruit has a powerful odour, and is often used for flavouring marmalade and other preserves. Wine is also made from it. In the heathen mythology the Quince was devoted to the goddess Venus, as being the emblem of love, happiness, and faithfulness, and has been supposed to be the golden fruit of the fancied garden of the Hesperides, defended by the dragon. The fruit of *C. sinensis* is very inferior to the common Quince.

Quinine. (*See Cinchona.*)

Quinoa (*Chenopodium Quinoa*), an annual plant of the

Spinach family (*Chenopodiaceæ*), growing to a height of from 4 to 6 feet, producing dense, erect, compound panicles of flowers. It is a native of Peru, and is much cultivated in Chili and other parts of Western America for its seeds, which form an important article of food, and are considered by the miners and others employed in laborious work as very strengthening. Before the conquest of Peru by the Spaniards it was the principal meal food of the Peruvians. In this country it is cultivated for feeding fowls, and its leaves are used as a vegetable. In the United States an oil is obtained from the seeds of *C. anthelminticum*.

Radish (*Raphanus sativus*), an annual herb of the Cabbage family (*Cruciferae*). It is not known in a wild state, but is supposed to be a cultivated form of the wild Radish (*R. Raphanistrum*), a common plant in this country and Southern Europe. If so, it must have come to its present edible state in early times.

Radish, Rat-tail (*Raphanus caudatus*), native of India and China, and was introduced into this country about twenty years ago. It is considered by some authors to be simply a variety of the common radish. It has been highly prized and much sought after on account of its long succulent pods, which under good cultivation attain a length of 2 to 3 feet, and are eaten either boiled or pickled. A few years since it was recommended for cultivation in this country, but it is now seldom heard of.

Raetem, the Arabic name for a kind of broom, named by Linnaeus *Spartium monospermum*, a shrub of the Bean family (*Leguminosæ*). In habit of growth it is similar to the common yellow broom of this country; but its branches are longer and more flexible, and of a grey colour, forming a dense bush 10 to 12 feet high. Its leaves are very small and few; its flowers are white, followed by a small, single-seeded, pod-like indehiscent fruit. It is common in barren tracts throughout the region of the Mediterranean, both European and African. It is the plant spoken of in the Bible under the name of Juniper: "Who cut up mallows by the bushes and *Juniper* roots for their meat" (Job xxx. 4). Instead of Juniper, the word (rothem) should have

been translated Broom : but as neither Juniper nor Broom is capable of being eaten as food, both being hard and nauseous in the extreme, we are led to suppose that it was some other plant that was eaten, and that it was a species of *Cynomorium* which grows on the roots of Raetem, in the same manner as Broom-rape (*Orobanche*) grows on the roots of broom and furze in this country ; further, *Cynomorium coccineum* has been seen growing in abundance on the Raetem in the region of the Dead Sea, and is known to be eaten in some parts in times of scarcity, especially in the Canary Islands, so that this plant may be accepted as explaining the words, "eating Juniper roots for their meat." (See Fungus Melitensis.)

Raffia, or Roffia. (See Jupate Palm.)

Rafflesia.—It is now sixty-two years since a great sensation was caused by the discovery in the Island of Sumatra of one of the most remarkable productions of the vegetable kingdom. This was a plant consisting of a flower only, measuring 1 yard in diameter, formed of five high fleshy lobes (petals), of a spotted or mottled red colour, the union of their bases forming a central cup capable of holding 12 pints of water, the whole weighing 15 lbs. It was found growing on a prostrate stem of a species of *Cissus*, a genus of the Vine family, and in its unexpanded state was like a red cabbage. From its carrion-like smell attracting insects, it was supposed to be a fungus ; but on specimens being submitted to the celebrated botanist, Mr. Robert Brown, it was found to be a true flower, having perfect stamens and pistils, but dioecious—that is, the stamens in one flower and pistils in another. He named it *Rafflesia Arnoldi*, after its discoverers, Sir T. S. Raffles and Dr. Arnold, and considered it to belong to the family Balanophoraceæ, all of which are parasites ; but it is now classed by some botanists as the type of a distinct family, Rafflesiaceæ.

Ragee, a name in India for *Eleusine coracana*, a millet-like grass, the seeds of which are used for food.

Raisins. (See Vine.)

Raki. (See Mastich.)

Rambutan. (See Litchi.)

Ramie, or Ramee (*Bœhmeria nivea*). (See Grass Cloth.)

Ramleh, the name of the fruit of *Pierardia sapida*, now placed in the genus *Baccaurea*, belonging to the Euphorbiaceæ. It is a small tree, with broad, entire, oblong leaves, native of the Malay Peninsula, as also of the Pegu forests of Burmah. Fruit the size of a large gooseberry, smooth, yellow, three-celled, with the seeds embedded in a pulpy aril. It is esteemed by the natives, and is generally plentiful in the Rangoon market.

Choopah is the native name of *P. dulcis*, a tree similar to the last, native of the Malayan Islands. Its fruits are nearly round, and rather larger than a cherry. They contain a sweet, luscious pulp, and like the last are eaten in large quantities.

Rampion (*Campanula Rapunculus*), a perennial of the Bell Flower family (Campanulaceæ), native of this country, common in gardens for its running, white, succulent roots, which are eaten as a salad.

Ram-til Oil, a name in India for an oil expressed from the seeds of *Guizotia oleifera*, a weedy-looking annual herb of the Composite family (Compositæ); cultivated in Abyssinia and various parts of India for the sake of its seeds, which yield a bland oil similar to Sesamum oil, used for lamps and for culinary purposes.

Rape (*Brassica Napus*) and **Colza** (*B. campestris*), two weedy annuals of the Cabbage family (Cruciferae). They differ in the leaves, one being smooth and the other hairy. They are extensively cultivated in this country and throughout Europe for their seeds, which yield Rape and Colza Oil. The consumption in this country is so great that immense quantities are imported. The refuse seeds form oil-cake for feeding cattle.

Camelina sativa, known as Gold of Pleasure, is a plant similar to the preceding, and cultivated for the same purposes.

Raspberry (*Rubus Idæus*), a cane-stemmed shrub of the Rose family (Rosaceæ), native of Britain, most parts of temperate Europe, and western temperate Asia. It is cultivated for its fruit, so called, which consists of numerous little achenia

embedded in pulp, forming a compound fruit. There are two kinds, the red and the white, and by cultivation fine varieties have been obtained. They are well known as dessert fruits, and large quantities are used for jams, jellies, and cooling drinks, also for raspberry vinegar, wine, and brandy. In 1873 one firm alone in London used 300 tons for these purposes.

Rasp Palm (*Iriartea exorrhiza*), a wing-leaved palm, native of Northern Brazil and Central America. It is remarkable inasmuch as its stem is supported on aerial roots, which diverge from the base in a slanting direction like props, and are of sufficient height for a man to walk beneath them. These supporting roots are 6 to 8 inches in circumference, covered with hard tubercles, and are used by the natives as graters. A fine example of this palm, with aerial roots 2 feet in length, was a few years ago to be seen in the Palm-house at Kew.

Rata, a name given by the natives of New Zealand to *Metrosideros robusta*, a tree of the Myrtle family (Myrtaceæ), remarkable for its mode of growth. Its nature is epiphytal; it begins by several young stems ascending some forest trees, like ivy; they thicken and involve the whole of the trunk of the tree to its summit, the tree ultimately dies and entirely disappears. The Rata stems becoming united, form a hollow trunk, 8 to 10 feet in circumference and 30 to 40 feet high, the lower part gradually filling up and becoming solid timber, which is almost like rosewood. The natives make their war-clubs, paddles, and other articles of it.

Rattan Cane. (*See Cane.*)

Ray Grass (generally pronounced Rye-Grass), species of the genus *Lolium*, *L. perenne* and *L. italicum*; being highly valued as pasture and hay grasses. *L. temulentum* is the poisonous Darnel (which see).

Red Snow, a name for *Protococcus nivalis*, a genus of the Conferva family (Confervæ). This singular substance consists of microscopic globules covering large tracts of snow in the Arctic and Alpine regions, with patches of a bright red colour, which, after pressure with the foot or sledge assumes the

appearance of blood. It is rapidly generated, and is in some parts believed by the peasantry to be showers of blood. It has been seen in Scotland by the writer.

Redwood. (*See* Humiri ; also Mahogany, Indian.)

Redwood of California (*Sequoia sempervirens*), a tree of the Coniferæ family, native of California, attaining a height of more than 300 feet. It has been introduced into this country and found perfectly hardy, some specimens being from 30 to 40 feet high, forming fine ornamental trees. (*See* Wellingtonia.)

Reeds, the culms or flower-stems of tall slender grasses, the common Reed of this country being *Phragmites communis*, growing on the banks of the Thames and other rivers, used for thatching and other domestic purposes. In France it is planted on the sea-coast with *Pinus maritima* to assist in fixing the sands.

Reed Mace, also known by the name of Cat's-tail. *Typha latifolia*, the great, and *T. angustifolia*, the lesser, Cat's-tail, representatives of the family Typhaceæ, are natives of this country and throughout Europe and Northern Asia. They are perennial rooted plants, with cane-like stems 5 to 8 feet in height, having alternate, broad, grass-like, glaucous leaves, terminated by a thick cylindrical head 6 to 8 inches in length, composed of numerous florets, each formed of hair-like glumes. The flowers are of separate sexes, the male containing a quantity of pollen, of which in some parts a kind of bread is made. They grow in lakes, rivers, and watery places, often forming thickets such as that which occupied the boggy ground at Shepherd's Bush fifty years ago, which is now covered with large mansions.

Reindeer Moss (*Cladonia rangiferina*), a lichen ; an erect finely-branched species of a white or grey colour, growing in compact masses, about 6 inches high, and covering large tracts of country throughout Northern Europe and Arctic America, where it may be said to represent the herbage of more southern latitudes. It is well known as the principal food of the reindeer.

Resin. (*See* Pitch.)

Resurrection Plant, a name given to *Selaginella lepidophylla*, a plant of the Club Moss family (Lycopodiaceæ), native of Mexico; in the valley of the Rio Grande growing on rocks, lying flat in the form of a rosette. It is of a vivid green colour, and on the air becoming dry it rolls up like a ball, and expands again on the approach of moisture. About forty years ago a quantity of these plants was imported and sold in London under the name of Rose of Jericho, but they afterwards became known as the Resurrection Plant.

Revalenta Meal. (*See Lentil.*)

Rewarewa, a New Zealand name for *Knightia excelsa*, a tree of the Protea family (Proteaceæ), attaining a height of 100 feet. It has handsome wood, which is used for furniture and cabinet-work generally.

Rhatany (*Krameria triandra*), a strong-rooted perennial suffruticose plant of the Milkwort family (Polygalaceæ), native of Peru. Its root is thick and fleshy, producing numerous spreading, somewhat decumbent stems; leaves alternate, simple, obovate, acuminate, and villose. The roots are highly astringent and tonic, and used by the Indians for the cure of many complaints; and some years ago were largely imported by the Spaniards and Portuguese for giving a red colour to wines, but the article has now fallen into disuse, and very little is imported.

Rhea Fibre. (*See Grass-cloth.*)

Rhododendron, a botanical name (now become familiarised) of an extensive genus of trees and shrubs of the Heath family (Ericaceæ), principally natives of the temperate countries of the northern hemisphere, as also on elevated regions of India and in the Malayan Archipelago. They vary considerably in habit and size, some being trees with large broad leaves, others trailing, partially epiphytal shrubs, and others heath-like. All have showy, and many of them splendid flowers. *R. ponticum* may be considered the type of the genus native of the Levant, and become naturalised in Gibraltar, and with *R. hirsutum* and *ferrugineum*, natives of the Alps, was introduced into this country about the middle of the last century. The North

American species *R. maximum* is, however, recorded to have been introduced earlier.

In Aiton's *Hortus Kewensis* 14 species are enumerated, including the above. In 1818 Dr. Wallich forwarded to this country seeds of *R. arboreum*, native of Nepal, which were reared in the Royal Botanic Gardens, Edinburgh, and two plants were forwarded to Kew, the largest of which was, in 1880, 23 feet high, girth of stem 3 feet 6 inches, and circumference of branches 15 feet, and in some years it is thickly covered with scarlet flowers. The introduction of several other Indian species quickly followed. The botanical discoveries of Sir Joseph Hooker in Sikkim Himalaya, between 1847-51, added greatly to the number of Indian species in cultivation. At the same time many fine species were introduced from Bhotan, none of which, however, were found sufficiently hardy to withstand the severe winters of this country. This led cultivators to raise hybrids between *R. ponticum* and other hardy species, and *R. arboreum* and other Indian species, which have proved eminently successful, and now our shrubberies are yearly gay with a numerous variety of variously-coloured showy flowers. Among the Sikkim species are trees 40 to 50 feet high, others form shrubs of ordinary size, while those of the higher regions form low bushes, some with heath-like leaves. A poisonous principle, of greater or lesser intensity in different species, pervades the whole of the genus. In Sikkim *R. cinnabarinum* poisons cattle and goats; many die from eating its leaves. When used as fuel it causes the face to swell and the eyes to inflame. *R. anthopogon* and *R. setosum*, two small-leaved bushy species, natives of the higher regions of Sikkim, emit an odour which gives headache to those travelling in the elevated regions where they grow. The scent of *R. anthopogon* is so strong, and is retained for so long a time, that it is disagreeable even in the herbarium. The flowers of *R. arboreum* yield such a large quantity of honey that the ground becomes wet under the plants. Bees and wasps get intoxicated and lose their lives by becoming fixed in the mass of honey.

Rhubarb.—*Rheum palmatum*, *R. officinale*, *R. Rhaponticum*,

etc., perennial plants of the Buckwheat family (Polygonaceæ), natives of Russia, the range of the Himalaya, and Western China. From the latter country large quantities of the roots enter Russia, from which place the best Rhubarb comes to this country. The roots of *R. Emodi* find their way to Aleppo thence to Constantinople, and from there to this country under the name of Turkey Rhubarb. There has been, until recently, much doubt as to the species which produces the best medicinal rhubarb. It seems, however, to be clear that it is to be attributed to *R. officinale* and *R. palmatum*, the Chinese and Tartars not being willing that the plant should be known. But the quality in a great measure depends on the collecting, drying, and transport. *R. palmatum* is not now grown in this country for medicinal purposes, but *R. Rhaponticum* is to a large extent, principally near Banbury; it is also extensively cultivated for its leaf-stalk, which is well known as a culinary vegetable, *R. undulatum* and *R. palmatum* being used for the same purposes, as well as being made into wine and preserves.

Rhubarb contains numerous crystalline bodies, in botany called raphides, which, by the aid of the microscope, are readily seen in the fresh or cooked leaf-stalk, having the appearance of numerous needles, and said to consist of phosphate of lime, and it is supposed that the medical virtue of rhubarb is in some way due to them, it being one of our best purgative medicines.

Rhubarb, Monk's, a name applied to *Rumex alpinus*, a strong-rooted perennial of the Buckwheat family (Polygonaceæ), native of Switzerland. It has the appearance of Rhubarb, but its leaves are smaller and heart-shaped. It has become naturalised in the mid-counties of Scotland, where it is known by the above name. It has been used medicinally as Rhubarb, but is of a drastic nature.

Rice (*Oryza sativa*), an annual corn-grass similar in habit of growth to barley, but almost an aquatic, requiring to be flooded in the early part of its growth. It is extensively cultivated in India and other Eastern countries. It was early introduced into America, especially the Southern States of Carolina and Georgia,

from whence, as well as from India, large quantities are imported into this country. It is the principal food of the native population of India, and in its unhusked state is known by the name of Paddy. In dry seasons the crop often fails and leads to famine, of which there have been several instances in late years. Rice was not known in Western Asia and Egypt in early times, but it is now extensively cultivated, as also in Italy.

Rice, Canadian. (*See* Canadian Rice.)

Rice, Hungary (*Paspalum exile*), a stout-growing grass of the Panicum section. Its flowers are produced in a simple, compact raceme, about as thick and as long as the finger. The grains are small, like millet. Cultivated in Hungary.

Rice Paper.—It might be supposed that the beautiful substance called Rice Paper was made of some part of the Rice plant, but such is not the case; the name is quite misleading. It was early ascertained to be a vegetable substance, but the plant producing it was long unknown to botanists, and on inquiry being made respecting it, fanciful figures and descriptions were given of it by the Chinese. Not long after the commerce of China was opened to Europe it was ascertained that it came from the Island of Formosa, which led Sir John Bowring, then Governor of Hong-Kong, to obtain plants of it from that island, one of which arrived safely at Kew in 1853, and flowered in 1855. From this it was proved to be *Aralia papyrifera*, now known as *Fatsia papyrifera*. It is a small tree of the Ivy family (Araliaceæ), attaining a height of 10 to 12 feet, with a stem 3 to 4 inches in diameter, the interior being full of white pith like that of the elder. It has soft downy palmate leaves, something like those of the plane tree, growing on long foot-stalks, and produces a somewhat erect paniced raceme of small flowers. The tree is cut down in order to obtain the pith, which averages, according to size, about 1 inch in diameter. It is divided into pieces about 3 inches in length, and by the aid of a lath and the use of a sharp instrument is cut into very thin rolls, and then becomes Rice Paper. It is extensively used by the Chinese for drawing figures of plants

and animals, and also for making artificial flowers. The plant requires the protection of a greenhouse in this country, and propagates freely from suckers. It is now common in Australia and other countries.

Rimu, a name in New Zealand for *Dacrydium cupressinum*, a tree of the Yew family (Taxaceæ), of pyramidal form, attaining a height of 80 to 100 feet, and 2 to 6 feet in diameter; its wood is red, close-grained, heavy, and solid, and is used for general building purposes. Its younger branches make excellent spruce beer, and were so used by Captain Cook.

Rocambole (*Allium Scorodosprasum*), **Shallot** (*A. ascalonicum*), biennial cultivated esculents of the Lily family (Liliaceæ). These have bulbs similar to garlic, but are much milder. They are more extensively used on the Continent than in this country. The last-named species is a native of Palestine, and derives its specific name from Ascalon, where it grows in great abundance. It has been cultivated from time immemorial by all the civilised nations of the East, entering largely into their daily food. It appears to have been used in England about the middle of the sixteenth century, the onion probably at a much earlier date.

Rock Lily, a name in New South Wales for *Dendrobium speciosum*, a plant of the Orchid family (Orchidaceæ), growing upon rocks. It has large pseudo-bulbs, the size of cucumbers, which are said to be eaten by the natives; and white, showy flowers.

Rohun. (See Mahogany, Indian.)

Room, or **Roum**, a name in Assam and other parts of India for *Ruellia tinctoria*, a plant of the Acanthad family (Acanthaceæ). By maceration of the stems and leaves in water, a blue dye is obtained equal to indigo. In China a dye is also obtained from a closely-allied species, *R. indigotica*.

Rose.—A number of plants differing widely from one another has received the name of Rose; the true Rose being represented by the species of the genus *Rosa*, consisting of numerous spiny, wing-leaved shrubs; the typical representative being of the Rose family (Rosaceæ), widely distributed over the tem-

perate region of the northern hemisphere, of which nearly 20 are natives of this country; the Dog Rose (*Rosa canina*), Scotch Rose (*R. spinosissima*), Sweet Brier or Eglantine (*R. rubiginosa*), being common examples. On account of their beauty and the high scent of their flowers, roses are highly patronised by all ranks, and are extensively cultivated in this country and France as fashionable show plants. In their natural state the flowers of roses are single, but varieties with double flowers were known in France and Italy more than 300 years ago, such as the Damask Rose (*R. damascena*), Provence Rose (*R. centifolia*), and Musk Rose (*R. moschata*), and were introduced into this country at the end of the sixteenth century. Roses were introduced from China at a later period. During the last half-century great labour and pains have been bestowed on the cultivation of the Rose, and now more than 1000 named varieties are recorded in nurserymen's trade catalogues, and they form an important feature in horticultural exhibitions. *Rosa moschata*, *R. centifolia*, and *R. damascena* are extensively cultivated in Cashmere, Persia, Damascus, Upper Egypt, Barbary, Adrianople, Ghazepoor in India, and to a small extent, comparatively, in this country, for the sake of their flowers, which by distillation yield the favourite toilet perfume Rose Water; and by other processes Oil of Roses is obtained, known as Otto or Attar of Roses. The oil is produced in very small quantities, requiring 60 lbs. of rose to produce a drachm and a half of oil; the quantity of oil yielded is according to the state of the weather and the time of gathering the flowers. Spirit of Roses is also obtained by distilling the petals with a small quantity of spirits of wine, which when mixed with sugar makes the liquor known in France as L'huile de Rose. Rose Vinegar is prepared by simply infusing dried petals in the best distilled vinegar. Honey of Roses is made by beating up fresh flowers with boiling water, and then mixing them with honey. Conserve of Roses is prepared by beating up the petals with their weight of sugar; it was once much used as a medicine, and still enters into the composition of electuaries and other compounds, to which it imparts fragrance. Otto of

Roses being expensive, is seldom obtained from the shops pure, being mixed with oil of geranium or even olive oil.

Rose Acacia (*Robinia hispida*), a strong-growing, stiff-branched shrub of the Bean family (Leguminosæ), native of North America, seldom exceeding 6 or 8 feet in height, having winged leaves, and pretty pink papilionaceous flowers, cultivated in gardens as an ornamental shrub.

Rose Apple (*Eugenia Jambos*), a small-sized tree of the Myrtle family (Myrtaceæ), native of the East Indies, and cultivated in many parts of the tropics; it is very common in the gardens of Madeira. There are few trees that combine so eminently the beauty of flower, fruit, and foliage; and nothing can exceed the loveliness and delicate appearance of the fruit, which is about the size of a hen's egg. Although one or two may be eaten with some relish, the overpowering perfume and taste of rose-water together with the want of juice render it unpalatable. A preserve is, however, made of the fruits.

Rose Bay, or Oleander. (*See* Oleander.)

Rose, Christmas. (*See* Hellebore.)

Rose, Jamaica Wild (*Blakea trinervia*), a climbing plant of the family Melastomaceæ, adhering to trees by its aerial roots. It was introduced into Kew in 1789, and its pretty pink flowers make it a favourite stove plant.

Rose of Jericho (*Anastatica Hierochuntica*), an insignificant annual of the Cabbage family (Cruciferae), consisting of several small-branched stems, 4 to 6 inches in length, rising from a tap-root, and at first lying prostrate; its flowers are white and small, and seated in the axils of small leaves. After the seeds are perfected, the stems become dry, hardened, and incurved, meeting each other, and forming a hollow skeleton ball, which by the force of the wind is loosened and blown about the desert, and is supposed to be the "wheel" and "rolling thing" spoken of in Ps. lxxxiii. 13, and Isaiah xlii. 13. It grows abundantly in the regions about Jericho, and is to a certain extent held sacred by the natives, as upon the application of moisture it again expands, retaining this property of expanding and contracting for many

years. It is also native of Syria, Egypt, and North Africa, growing in dry desert places. Of late years two small weedy plants of the Composite family have come into notice as the Rose of Jericho—namely, *Asteriscus pygmaeus* and *Gymnarrhena micrantha*, common in the plains of Jericho, both hygroscopic, like *Anastatica*.

Rose of Sharon. (*See* Narcissus.)

Roselle (*Hibiscus Sabdariffa*), a biennial of the Mallow family (Malvaceæ), native of India; recorded to have been cultivated by Gerard in 1596; it is now common in most warm countries. The calyces of the flowers when ripe are pleasantly acid, and used for flavouring tarts and jellies; they also make a cool refreshing drink.

Rosemary (*Rosmarinus officinalis*), a stiff-branching, bushy shrub of the Mint family (Labiatae), 3 or more feet high, having narrow hoary leaves. It is a native of the South of Europe and Western Asia. Like lavender, it is cultivated for its perfume, which is of a stimulating and refreshing nature, and has received the name of Herb of Memory. It grows abundantly in some parts of France, especially in Narbonne, where it scents the air, and imparts a flavour to honey. A conserve and liqueur are made from it, and it is also used in the manufacture of Hungary Water and Eau-de-Cologne. An oil is obtained from it which is used as a perfume. Rosemary was held in high esteem by the Greeks and Romans, it being a powerful stimulant to the nervous system, and it was regarded as the emblem of fidelity.

Rosewood, the name given to the timber of several different kinds of trees in their respective countries. The best is considered to be the wood of several species of *Dalbergia*, hard-wooded trees of the Bean family (Leguminosæ); *D. nigra*, the Rosewood of Brazil, being considered the finest.

Rosewood, African (*Pterocarpus erinaceus*), a large wing-leaved tree of the Bean family (Leguminosæ), native of Western and tropical Africa.

Rosewood, Burmese (*Pterocarpus indicus*), a large tree of the same family as the preceding, native of Burmah.

Rosewood, Canary. (*See* Oil of Rhodium.)

Rosewood, Dominica (*Cordia Gerascanthus*), a large tree of the Sebesten family (Cordiaceæ), native of the West Indies and tropical America; it is also called Spanish Elm and Prince Tree.

Rosewood, Indian.—*Dalbergia latifolia* and *D. sissoides*, large trees of the Bean family (Leguminosæ), common in India.

Rosewood, Jamaica (*Linociera ligustrina*), a tree of the Olive family (Oleaceæ), 40 feet high, native of Jamaica, by some called Jamaica Rosewood. The wood is very hard and fragrant, and is excellent timber. *Amyris balsamifera* is also called Rosewood in Jamaica.

Rosewood, New South Wales (*Trichilia glandulosa*), a large tree of the Bead Tree family (Meliaceæ).

Rosin Plant. (*See* Compass Plant.)

Rouge. (*See* Safflower.)

Rowan Tree. (*See* Ash, Mountain.)

Rue (*Ruta graveolens*), an erect, bushy, evergreen shrub, 2 to 3 feet high, the type of the Rue family (Rutaceæ). It is a native of Southern Europe and Western Asia. It is recorded to have been introduced into this country about the middle of the sixteenth century, and is cultivated in most gardens. It was held in high favour as a medicinal plant by the ancients, being for many ages considered a preventative of contagion. Its repute is probably more due to its strong heavy odour than to any active chemical principle; it is, however, said to be a powerful stimulant and narcotic, and in the hands of herb doctors Rue tea is a remedy for many disorders. It is used by spirit dealers to give a false flavour to spirits. Although the meaning of the Greek and Latin word *Ruta* given to this plant is not known, nevertheless the English word Rue, which means to repent, has been derived from it. Shakespeare speaks of it as Herb of Grace, and being so called has given rise to the custom of placing sprigs of Rue before judges.

Run Palm. (*See* Palmyra.)

Rushes, the common name for the different species of the

genus *Juncus*, of which there are about 20 species natives of Britain, growing in ditches, on river-sides, and marshy ground in general; they have cylindrical, soft, pithy stems, destitute of leaves, varying from a few inches to 2 to 3 feet in height, their flowers being produced in clusters, either direct from the apex, or issuing from a sheath a little below. In Lincolnshire, and other counties where they abound, rushes form an important article of industry, chair bottoms, hassocks, mats, and baskets, being made of them, and their pith forms the wicks of rushlight candles; the species chiefly used for these purposes are *J. communis* and *J. acutus*.

Rust, a kind of mildew common on corn grass.

Rye, or **Rie**, as spelt in the Bible (*Secale cereale*), an annual corn-grass, extensively cultivated in many parts of Europe. It is, however, supposed not to be the Rie grown in Egypt in the time of Moses (see Spelt). Rye is subject to a disease called Ergot (which see). Up to the end of the last century black or rye bread was the common bread of this country, but it has been gradually superseded by wheaten bread.

Sabadilla (*Asagrea officinalis*), a herb of the Colchicum family (Melanthaceæ), native of Mexico. The poisonous principle Veratrine is obtained from its seed, which is used in medicine, and for destroying vermin.

Sabicu, the wood of *Lysiloma Sabicu*, a large tree of the Mimosa section of the Bean family (Leguminosæ), native of Cuba. It is highly valued for shipbuilding, and yields planks 4 to 5 feet in width. It is extremely hard, in consequence of which it was used for the stairs of the first Great Exhibition in 1851, which when removed at the close of the exhibition were found as sound as when laid.

Sachet Powder. (See Myrtle.)

Sack Tree (*Antiaris toxicaria*), better known as *A. saccidora*, a small tree, with entire oblong leaves, of the Bread-fruit family (Artocarpaceæ), native of Western India, having a very tough, close, fibrous bark, the inner portion of which is converted into sacks; this is accomplished by cutting pieces of the trunk from

the trees in lengths the size wanted, and pulling the bark over the wood, which is then cut away, leaving a piece of wood at one end to form the bottom, a natural sack is at once obtained.

Sacred Bamboo, a name in China for *Nandina domestica*, an erect single-stemmed shrub, like a small tree, of the Barberry family (Berberidaceæ), bearing tufts of compound leaves on its apex, terminated with panicles of flowers, followed by red berries, like those of the holly. It is a native of China, and at the season in the Chinese religion answering to our Christmas, it is used for decorating houses and altars in temples, and hence the name of Sacred Bamboo.

Sacred Bean, a name in India for *Nelumbium speciosum*, a remarkable aquatic of the Water Lily family (Nymphæaceæ), widely dispersed throughout the tropical and sub-tropical regions of both Old and New World, growing in shallow lakes and rivers. Its stem is a rhizome about the thickness of the finger, extending to a considerable length in the mud, from which arise stalks about 3 feet high, each bearing a circular leaf about 1 foot in diameter attached to the stalk by its centre. The flower-stalk rises to about the same height, bearing a large flower, similar to that of a double poppy. It varies in the colour of its flowers. In the East it is generally of a pink or rose colour, and in the West Indies and Southern United States yellow and white, and blue flowers are said to have been seen in the interior of Australia. In the centre of the flower is a thick, spongy, conical body, flat on the top, in which the seeds, or properly the fruits, are embedded. They consist of oblong nuts, about twice the size of peas, and when perfect so hard that it requires a hammer to break them. It is called the Pythagorean or Egyptian Bean, and is supposed to be one of the plants called the Egyptian Lotus (which see). Although not now found in the Nile, it nevertheless appears at one time to have been common there, and was held sacred by the worshippers of Isis, as is evident by the sculptures and representation of the flower found in the ruins of the ancient temples. It is noticed by Herodotus (413 B.C.), who says—"Another lily grows in the

same places [*see* Lotos], much like a rose, with a certain fruit found at the foot¹ of the stem, in form not unlike a wasp's nest, and covered with a pellicule, containing divers kernels of the size of an olive stone, which are eaten either tender or dried." Although the above description is brief, it is nevertheless sufficient to prove that *Nelumbium* grew in the Nile in the time of Herodotus, and even as late as the time of Dioscorides (about A.D. 50), who calls it *Cyamus*, and by some writers it is called Lotus Plant. Since then it has entirely disappeared from the Lower Nile.

Its worship is by no means confined to the ancient Egyptians, for in India, Tibet, China, and Japan, the plant was deemed sacred, and indeed it is still employed in religious invocations and ceremonies. The leaf-stalks abound in spiral fibres, which are carefully extracted and made into wicks to burn before their idols, and its leaves are used as plates on which offerings are placed. Its farinaceous rhizomes form an important article of food both in India and China.

Sacred Trees.—Among the uncivilised nations of the earth different kinds of trees in their respective countries are held sacred, of which in India the well-known Peepul Tree (*Ficus religiosa*) and the Banyan (*F. bengalensis*) are examples (which see). Africa has several; one of special veneration is *Kigelia pinnata*, a tree of the Calabash family (Crescentiaceæ), found from Nubia on the north to Mozambique on the east, as far south as Natal, and as Senegal and Guinea on the west, and widely spread over the intermediate regions of these countries. It is a large-spreading, branched tree, with white bark and winged opposite leaves, of a firm texture. The flowers are borne on long-stalked panicles hanging from the main trunk and branches. The fruit is gourd-like, often 2 to 4 feet long, and from 5 to 8 inches broad, hanging from a stalk several feet in length. It has a white corky rind filled with pulp, in which are embedded a number of roundish seeds. In Nubia this tree is held sacred, and the negroes celebrate their religious

¹ Instead of *foot* it should have been *top* of flower-stem.

festivities under it by moonlight, and erect poles made of its wood before the houses of their chiefs.

Safflower (*Carthamus tinctorius*), a prickly stiff-leaved annual of the Composite family (Compositæ), about 2 feet high, producing spiny heads of red flowers. It has long been cultivated throughout China, India, the Levant, Egypt, Southern Europe (where it is called Cardoon), and even at one time in England, where it was introduced 300 years ago. It yields a valuable dye, varying in shades of colour between red and yellow, which is obtained by collecting the red florets just before withering, and is greatly used for dyeing China silks, crapes, and Spanish wool. It is also the principal ingredient in the rouge that is used by actors, etc. The seeds yield an oil, which is employed for burning in lamps, and also for culinary purposes in India. It is likewise said to be the principal ingredient in Macassar Oil.

Saffron (*Crocus sativus*), a plant of the Iris family (Iridaceæ), a species with blue flowers, native of Southern Europe and Western Asia. It has become wild in this country, and at one time was rather extensively cultivated at Saffron Walden. The yellow stigmas of the flower are collected, and form the dye known as Saffron, the bulk of which is imported from France, Spain, and Italy, and it is extensively cultivated in Cashmere. The stigmas of upwards of 4000 flowers are required to produce a single ounce of Saffron. It is well known as a valuable dye, and is also used for colouring cheese and medicinal preparations. Saffron is spoken of by Pliny as being cultivated in Italy, and it is supposed to have been introduced into Cornwall by the Phœnicians in exchange for tin. It was held in high medical repute by the ancient Arabian physicians.

Sagapenum, a name in India for a gum-resin supposed to be derived from *Ferula persica*, a perennial of the Carrot family (Umbellifereæ), or some allied species. It has a slight alliaceous smell. Small quantities only are imported.

Sage (*Salvia officinalis*), a stiff shrub of the Mint family (Labiatae), about 2 feet high, with rough hoary leaves, native of the

South of Europe. It has been cultivated in this country for above 250 years. It is well known as a culinary herb, and was at one time used as tea, having tonic qualities.

Sage Plant, the name given to *Artemisia tridentata* in the Salt Lake country of America. It is a kind of wormwood. It attains a height of 3 to 5 feet, and occupies a vast extent of desert land, to which it imparts a peculiar aspect and smell.

Sage, Wild. (*See* Flea-bane, African.)

Sago.—*Sagus levis* and *S. Rumphii*, by modern botanists united under *Metroxylon Sagu*. These are natives of Siam, Indian and Malayan Islands, extending to the Fijis. Wing-leaved palms, attaining a height of 30 to 50 feet, with a diameter of 6 inches to 1 foot, or more. The Sago is obtained by cutting down the trees and splitting them open. The pith, which consists of a soft white substance, is extracted and thrown into tanks of water. It is repeatedly washed and all impurities run off. It is then left to settle, which it does in the consistence of a pure pulpy paste, which is dried and granulated through sieves, and forms the Sago of commerce, some of which is also produced by *Caryota urens* and other plants. A kind of Sago is also obtained from *Zamia integrifolia* and *Z. furfuracea*, plants of the Cycad family (Cycadaceæ). They are dwarf plants, seldom exceeding 2 feet in height, often producing several stems from the same stalk. They are abundant in the Bahamas, and some of the small islands near Jamaica. Their pith contains Sago, which is used in Jamaica. (*See* Cycas.)

Sago, Portland.—This is prepared from the tuberous roots of *Arum maculatum*, a herb of the Arum family (Aroideæ), native of this country, known by the names of Wake Robin, Lords and Ladies, and Cuckoo Pint. In the Isle of Portland, where it is abundant, a farinaceous meal is obtained from it called by the above name.

Saintfoin (*Onobrychis sativa*), a perennial, strong-rooted, pretty flowering, clover-like plant of the family Leguminosæ, native of this country, but rare. It is cultivated as a fodder plant.

Sal, the Indian name for *Shorea robusta*, a tree of the family Dipterocarpaceæ. It is a magnificent tree, attaining a height of 100 feet, native of India, stretching from the Bengal provinces to the foot of the Himalayas. Its wood is of a light-brown colour, close-grained, strong and durable. It is considerably stronger and heavier than teak. It and other species of *Shorea* yield a resin known as Dammar, obtained by making incisions in the tree. An oil is obtained from its seeds.

Salaras. (See Chirata.)

Salep, a farinaceous meal obtained from the tubers of several terrestrial orchids. *Orchis mascula*, *O. Morio*, *O. militaris*, *O. pyramidalis*, and all the bulbous European species, produce the starchy mucilaginous substance known as Salep, which is obtained by macerating the bulbs in water. It contains a chemical substance called Bassorine, which is said to contain more nutritive matter than any other vegetable product, one ounce per diem being sufficient to sustain a man. Large quantities of Salep are prepared in Macedonia and Greece; but the finest comes from Turkey. In the Himalaya and Cashmere many species of bulbous-rooted orchids yield Salep, which is largely used as food by the natives.

Sallow, a common name for *Salix Caprea*, a shrub of the Willow family (Salicaceæ), common in hedges and waste places. Its flowers are borne in large yellow catkins, which are generally produced about Palm Sunday. It is by many people gathered and worn as an emblem on that day, and is known by the name of Palm, and also by that of Goat Willow. It is cultivated for its rods, which are cut at the age of one year for basket-making, and at two or three years old for hoops. Its bark contains Salicine, used at one time as a substitute for Quinine.

Saloop, the name of a beverage prepared from the bark of *Sassafras officinale* and other ingredients. (See Sassafras.) It was at one time sold as a morning drink in the streets of London to the working-classes. It is a good tonic, and creates an appetite.

Saloop Bush, a name in Australia for *Rhagodia hastata*, a

shrub of the Spinach family (Chenopodiaceæ). It is an erect, soft-stemmed bush, 2 to 3 feet high, with small soft leaves, and inconspicuous flowers, native of New South Wales, and has been introduced of late years into Hong-Kong and other countries as a cattle-food plant.

Salsafy (*Tragopogon porrifolius*), a biennial of the Composite family (Compositæ), native of England. It is cultivated in gardens for its long, fleshy, tapering root, which is white. It is of the form of a Carrot, but of smaller size, and it forms an excellent vegetable when properly cooked, for which there are special directions in cookery books. It is considered good in promoting digestion.

Salt Tree (*Halimodendron argenteum*), a small tree, with abrupt, pinnate, hoary leaves, of the Bean family (Leguminosæ), native of Siberia and the Natron Plains in the region of the Caspian.

Salt Tree, Indian. (See Tamarisk.)

Saltwort, American (*Batis maritima*), a low, erect, succulent plant, with small opposite leaves, and inconspicuous unisexual flowers, produced in cone-like spikes. In general habit it is similar to glasswort, with which some botanists consider it to be allied; others viewing it as the type of a special family (Batideæ). It is a native of salt marshes in the West India islands and coasts of tropical America. In some countries it is burnt for the carbonate of soda which it contains. In Jamaica it is used as a pickle.

Saltwort, Shrubby (*Salsola fruticosa*), an erect, branching plant, of the Spinach family (Chenopodiaceæ), 2 to 3 feet high, having small semi-cylindrical leaves, not more than half an inch in length. It is common on the shores in warm parts of Europe, Northern Africa, and Western Asia. It is found in this country but rarely, in some parts of the Eastern and Southern shores only. In the South of Europe it is burned for Barilla.

Samphire (*Crithmum maritimum*), a perennial of the Carrot family (Umbelliferæ), native of the rocky shores of Europe, particularly of the cliffs of Dover. It is a plant about a foot

high, having small, inconspicuous umbels of flowers, of a greenish yellow colour. Its leaves are compound, ternate, the divisions lanceolate, succulent, and of a glaucous white colour. It was formerly used as a pickle; but is now nearly obsolete. Other sea plants are sometimes substituted for Samphire.

Sandbox Tree (*Hura crepitans*), a large, strong-growing tree of the Spurgewort family (Euphorbiaceæ). It is common throughout Western tropical America, and has long been cultivated in the hothouses of this country. Instances have been known of the juice of this plant causing fatal injury to the eyes. The fruit is very curious, being of a circular form, consisting of from 12 to 15 valved cells, which give it the appearance of a wheel about 3 inches in diameter, each cell containing a single flat seed. It is often kept as a curiosity, but with overheat or dryness it bursts with a report as loud as a pistol, spreading its seeds and valves sometimes to a distance of several feet.

Sandal-wood (*Santalum album*), a small tree of the family Santalaceæ, about 25 feet high, and seldom more than a foot in diameter, with nearly opposite oblong leaves of a light colour. It is a native of various parts of India, particularly Malabar and Coromandel, as well as in the Pacific and Malayan Islands. According to the size and age of the tree the interior is of a dark or light yellow colour, and it is the heart-wood that is the valuable part; it is highly fragrant. The burning of incense has from the earliest ages been intimately connected with the religious sentiments of man—being practised by Pagan, Jew, and Christian. In the Catholic churches of the latter various kinds of aromatic gum-resins are used, while in Pagan temples Sandal-wood holds the highest rank, pieces of the wood, varying in size according to circumstances, being burned before the images of their deities, and the millions of Brahmins and Buddhists, on beholding the smoke of the incense curling heavenward, presume they have performed their religious duties, and that the perfume smelt by their deity will obtain forgiveness of sins. In Chinese temples joss sticks (candles), made of sawdust of Sandal-wood and swine's dung, are

kept burning before their idols. Other species of *Santalum* furnish Sandal-wood. On the discovery of Sandal-wood in the Polynesian Islands shiploads were taken to China and to Europe, so that in many islands the trees have become extirpated, and the chiefs consider a piece of Sandal-wood a valuable present to a visitor. Unfortunately the clandestine cutting down of trees and the unfair dealings with the natives so irritated them against white men that much bloodshed has on both sides been the result. A case of this kind led to the unfortunate murder of the celebrated missionary, the Rev. Mr. Williams, and his colleague at the island Eromango in the year 1839. Fancy articles are made of the wood, which are highly esteemed among the Chinese as presents. An oil is extracted and used as a perfume. The Sandal-wood tree of Fiji is a distinct species described as *S. yasi*, the fruit of which resembles a black currant. The Sandwich Island tree is also considered distinct, known under the name of *S. Freycinetianum*. Sandal-wood trees have been supposed by some writers to be the almug and algum trees used in the building of Solomon's Temple, but their fragrance not being mentioned and the known smallness of the tree render such views problematical. (See my *History of Bible Plants*.)

Sandal-wood, False.—In the Bombay Presidency the wood of *Ximenia americana* is used as a substitute for true Sandal-wood. It is a small tree of the Olax family (Olacaceæ). It is found in many parts of the tropics; its flowers are very fragrant, smelling of cloves; the fruit is oblong, pulpy, yellow, about an inch in length, and is eaten by the natives in various parts. In Crete the wood of an oak (*Quercus abelicea*) is called Sandal-wood; it is of a reddish colour and has an agreeable perfume. Another false Sandal-wood is *Myoporum tenuifolium*, a small tree of the family Myoporaceæ, native of Otaheite; it attains a height of 15 to 20 feet, with a girth of 3 to 4 feet. The heart-wood differs according to the age of the tree, from yellow to red, and contains an essential oil, which is fragrant, but not equal to the true Sandal-wood oil.

Sandal-wood, Red, or Saunder's-wood (*Pterocarpus santalinus*), a large tree of the Bean family (Leguminosæ), native of India, principally abounding on the Coromandel coast. The wood is heavy, close-grained, and of a red colour, it is used for dyeing, and produces different colours, according to the mordants used. It is supposed by some authorities to be the almug trees of Solomon. Red Sandal-wood is also the name in India for *Adenanthera pavonina*, a large tree of the same family, having decompound winged leaves. It is highly valued for its timber, as also for producing a red dye, which is obtained by simply rubbing the wood on wet stones. The seeds are oblong, hard, and of a bright-red colour, and are used for making necklaces and other ornaments; they are also used as a standard weight by jewellers, each seed weighing four grains.

Sandarach, the resin of *Callitris quadrivalvis*, also known as *Thuja articulata*, a tree of the Coniferæ family, native of Algeria and other parts of North Africa. It seldom exceeds the height of 30 feet, and has hard, dark-coloured, fragrant wood that takes a fine polish, and is used in ornamental cabinet-work, of which there are fine specimens to be seen in the Museum at Kew. It was highly prized by the Greeks and Romans, and costly tables were made of it. It is believed to be the Thyine Wood mentioned in the book of the Revelation, and, if it be so, "the merchants of the earth" must have carried it as far as Babylon. The resin is very odoriferous, and is used for varnishing.

Sandpaper Trees.—*Dillenia scabrella* and *D. sarmentosa*, trees of the family Dilleniaceæ, natives of India. (See *Dillenia* and *Curatella*.)

Santa-Maria Wood. (See Calaba Tree.)

Sapgreen. (See Buckthorn.)

Sapodilla Plum. (See Naseberry Tree.)

Sappan-wood (*Cæsalpinia Sappan*), a tree of the Bean family (Leguminosæ), native of the East Indies, attaining a height of 30 to 40 feet; it has compound winged leaves, with prickly branches, and a brownish-red wood, which is the Sappan-wood of commerce; it is largely imported into this country for

dyeing. Its root also gives a yellow dye. In India the wood is known by the names of Bukkum or Wukkum.

Sapucaia Nut, in Brazil the name of the nuts of *Lecythis Zabucajo* and *L. Ollaria*, large trees of the Monkey-pot family (Lecythidaceæ), natives of forests in the region of the Amazon; they have large urn-shaped fruits of a hard woody texture, about 6 inches in diameter, with lids measuring about 2 inches across; when ripe the lid separates from the capsule, emitting a sharp sound, which when heard by the monkeys is a signal that the nuts are falling and a scramble and fight to be the first to obtain them ensues; on this account few are left for the trader, and the export is consequently small. The common name of Monkey-pot is applied to the capsule when empty.

Sarcocolla (*Penea Sarcocolla*), a shrub of the Sarcocol family (Penæaceæ). There are about 20 species, native of South Africa, *P. Sarcocolla* being a shrub with small, closely-imbricate, compact leaves. The flowers are red, produced in a compact oblong head. The plant produces the gum called Gum Sarcocol; but there is no evidence to prove that it is the Sarcocol of the ancients, so famed for healing wounds.

Sarsaparilla, a Spanish name for the roots of certain plants, more especially for the cord-like roots of several species of *Smilax*, the typical genus of the Sarsaparilla family (Smilacæ); it consists of a considerable number of species, generally slender, bushy, or climbing, with woody stems, rambling over bushes like brambles. Their leaves are alternate, varying from nearly round to elliptical, lanceolate, entire, smooth, and shiny. The flowers are inconspicuous, and the fruit is a berry. The species are widely dispersed over both hemispheres; from their roots is obtained the drug termed Sarsaparilla; it is considered to be of high repute as a restorative medicine in complaints arising from poorness of blood. The roots are imported in various-sized bundles; the quality varies according to the species and country from whence it comes. The principal imports are from the West Indies, Brazil, and other parts of tropical America; that from Jamaica is supposed to be the roots of *S. officinalis*,

that from Brazil from *S. papyracea*, and from New Grenada that of *S. syphilitica*. *S. mauritanica* and *S. aspera*, natives of the South of Europe, are hardy in this country in sheltered situations.

Sarsaparilla, Indian (*Hemidesmus indicus*), a shrub of the Swallowwort family (Asclepiadaceæ). It is a native of India, where its roots are used as a substitute for Sarsaparilla.

Sassafras Trees, American (*Sassafras officinale*), a tree of the Laurel family (Lauraceæ), native of the United States, where it is extremely abundant from Boston to the banks of the Mississippi, and from the shores of the ocean in Virginia to the remotest wilds of Upper Louisiana ; its usual height is 40 to 50 feet, but about 43° north it only attains the size of a large bush. In the southern parts of the country where it is most abundant the air is impregnated with the aroma, which extends a considerable distance seaward. The tree forms a large head of horizontal branches, furnished in summer with broad, oblong, elliptical leaves. Its fruit is a small black drupe, from which a strongly-scented oil is obtained ; it is not palatable, but is greedily eaten by birds ; its bark is aromatic and used medicinally as a tonic. A tree at Kew about 100 years old has attained the height of 40 feet.

Sassafras, Californian (*Oreodaphne californica*), is a large tree of the Laurel family (Lauraceæ). It has several names ; such as Spice-bush, Balm of Heaven, Cajeput Tree, etc., which shows it to be a tree of repute as regards its medicinal properties. Its leaves are pungently aromatic ; during high winds the aroma is so strong as to cause excessive sneezing. It has been introduced into this country under the name of *Laurus regalis*.

Sassafras, Australian (*Doryphora Sassafras*), native of New South Wales, and equal in magnitude to the preceding, and belonging to the family Atherospermaceæ.

Sassafras, Chilian (*Laurelia sempervirens*), also a large tree similar to the last, native of Chili and Peru. Its fruit is aromatic ; it has obtained the name of Peruvian Nutmeg, but is of no value. Another Chilian Sassafras is *Boldoa fragrans*, a small

tree with broad, entire, bay-scented leaves, also a native of Chili.

Sassafras, New Zealand (*Laurelia Novæ Zelandiæ*), a large handsome tree of New Zealand, of from 100 to 150 feet in height, having buttresses 15 feet in diameter; a member of the same family as the preceding. Native name, Pechatea.

Sassafras Nut, a name given to the cotyledons of the seeds of *Nectandra Puchury*, a tree of the Laurel family (Lauraceæ), native of Guiana. They are aromatic, and used for flavouring chocolate instead of Vanilla.

Sassafras, Swamp. (See Magnolia.)

Sassafras, Tasmanian (*Atherosperma moschata*), a tree of the family Atherospermaceæ, native of Mount Wellington in Tasmania. It attains a height of from 100 to 150 feet, and a diameter of from 2 to 3 feet. Its aromatic bark has been used as a substitute for tea; it yields a fragrant essential oil.

Satin-wood, a name in India for *Chloroxylon Swietenia*, a large tree of the Mahogany family (Cedrelaceæ), native of Ceylon, Coromandel, and other parts of India. The wood is hard, fine-grained, and of a light satiny lustre, chiefly used for the backs of toilet-brushes and fine articles of turnery ware. Another kind, called Bahama Satin-wood, comes from the West Indies, chiefly from Nassau and New Providence. It is a beautiful wood of a light canary yellow colour and satiny lustre. It comes in logs about 10 feet in length and 8 inches square. It is supposed to be the wood of an unknown plant of the Ebony family (Ebenaceæ).

Savin (*Juniperus Sabina*), a low bushy shrub or small tree of the Cypress section of the Fir family, native of Western Asia. It has been long cultivated in this country as a garden shrub, and is admitted into the London Pharmacopœia as a medical plant. It is of a poisonous nature, and is highly dangerous when used by unskilled persons and quacks.

Savory, Summer (*Satureia hortensis*), an annual of the Mint family (Labiataë); **Winter** (*S. montana*), small hardy evergreen shrubs, 1 to 2 feet high; natives of France and Italy. They are

recorded as having been cultivated in this country as far back as 1562, and were then as now esteemed as pot-herbs.

Savoy. (*See Cabbage.*)

Scammony, the name of a purgative medicine obtained from the tuberous roots of *Convolvulus Scammonia*, a perennial climber of the Bindweed family (Convolvulaceæ), native of Asia Minor, growing wild in open places among bushes. Its roots are fleshy, single like a parsnip, or forked; they contain a milky juice, to obtain which the top of the root is cut in a slanting manner, from which the juice runs into a shell placed to receive it; each root only yields a few drachms; after a quantity is collected it is put together and dried in the sun, and finally moulded into cakes or balls; it is also obtained by pounding the roots. Pure Scammony is seldom to be obtained, being commonly mixed with the expressed juice of the roots, and even of the stalks and leaves, and other ingredients. It comes to this country chiefly from Smyrna.

Scarlet-runner Bean (*Phaseolus multiflorus*), a climbing plant of the Bean family (Leguminosæ), native of Mexico, where its roots are perennial, but in this country it is cultivated as an annual for the sake of its green pods, which are largely used as a summer vegetable. It is remarkable as being one of the few plants which twine in a contrary direction to the sun—that is, from right to left.

Scimitar Pods, *Entada scandens*, a strong fruticose climber of the Bean family (Leguminosæ), attaining a great height, native of tropical India and America. It is remarkable for its large hard woody flat pods, which are from 4 to 6 or even 8 feet in length, and being often curved resemble a sword or scimitar. They contain round hard convex seeds about 2 inches in diameter, which are split open and made into snuff and toy boxes. The seeds are sometimes sold in the streets of London under the name of Indian filberts, but they are not eatable. They are often carried by the Gulf Stream to the western shores of Scotland, and have been known to vegetate afterwards.

Scorzonera (*Scorzonera hispanica*), a perennial herb of the

Composite family (Compositæ), native of Spain, having lanceolate leaves, and a simple or branched flower-stem, a foot or more in height, bearing terminal heads of yellow ligulate florets. It has been long cultivated in gardens in this country for the sake of its roots, which are thick and fleshy like the carrot, but sometimes forked. Its properties are equal if not superior to dandelion, and it is a wholesome vegetable when properly cooked. In Spain it is supposed to be a cure for bites of vipers, hence it is called Viper Grass.

Scotch Fir (*Pinus sylvestris*), a tree of the Coniferæ family. This well-known tree has an extensive range throughout Europe and Northern Asia, where it forms large forests, such as may be seen in the North of Scotland, some trees attaining a height of 100 feet, and affording excellent timber, which is imported from the ports in the Baltic under the name of Riga and Norway timber. The smaller trees are used for scaffold poles. It also yields tar. The word Fir is frequently named with cedar and other trees which Solomon obtained from Lebanon for the building of the Temple. One of these was doubtless *Pinus halepensis*, which takes the place in Lebanon and other mountains of Palestine of the Scotch Fir, and may be admitted to be the Fir tree instead of cedar used for ship-masts, as stated in Ezekiel, chap. xxvii. ver. 5. (See Pine Trees.)

Screw Pine.—*Pandanus odoratissimus*, the type of the Screw Pine family (Pandanaceæ), which, with other allied species, are natives generally of the sea-shores of India, the Indian, African, Malayan, and Polynesian islands generally. They abound in Mauritius, and attain a height of 20 to 30 feet, and are known by the name Vacoua. Their stout aerial roots give to their palm-like stems the appearance of being supported on props, and at a distance they look like candelabra. This last remark applies more particularly to *P. candelabrum*, native of Western tropical Africa. Their leaves are sword-shaped, 4 to 6 feet in length, with sharp, spiny margins. Their fruit consists of many one-seeded ovaries, forming a hard, globose, compound fruit, some as big as a man's head. Many

fruits fall into the sea, and are wafted by the currents and thrown on emerging coral reefs, where they vegetate and attain a considerable size. They have a singular appearance, seeming to rise out of the ocean. In India *P. odoratissimus* grows on the banks of canals in Travancore, and is useful as a sand-binding plant, and also for forming hedges; its fruit is of a red colour, and very attractive. An oil called Keora Oil is made from its flowers.

This species receives its name *odoratissimus* from the fragrance emitted by the male flowers, presenting a great contrast to those of *P. fetidus*, also a native of India; which smell like rotten onions and carrion. The most important economic part of these plants is the leaves, which are made into mats, baskets, hats, etc., and in Fiji they are prepared and made into ornamental dresses. The thick, aerial, rope-like roots consist of tough, spongy fibre, which, cut into lengths and beaten out at one end, form brushes. They are also used as a substitute for corks.

Scrub Shrub (*Commidendron rugosum*), a shrub of the Compositæ family (Compositæ), native of St. Helena, where it is also called Gum Shrub; and another species, *C. spurium*, is known as the Little Bastard Gum Tree, and Cabbage Tree. They are scrub-like shrubs, having alternate obovate or cuneate leaves and flowers in close heads. These plants represent part of the original endemic flora still remaining in St. Helena, the bulk of which since the introduction of goats has become extinct.

Sea Holly (*Eryngium maritimum*), a strong-growing perennial of the Carrot family (Umbelliferae), found on the sandy shores of this country. It has stiff stems, bearing spiny leaves and spiny compact umbels of blue flowers; the whole plant has a bluish-white appearance. The roots are thick and fleshy, and on account of their peculiar flavour are preserved in sugar, and sold by the confectioners as candied Eryngo. When boiled and roasted they resemble chestnuts, and are palatable and said to be nutritious.

Sea Purslane. (*See Orache.*)

Sea Thrift. (*See Lavender, Sea.*)

Sea Trumpet. (*See* Trumpet.)

Seaside Grape (*Coccoloba uvifera*), a small tree of the Buckwheat family (Polygonaceæ). It has cordate oval leaves, and is a native of Barbadoes and other West Indian islands. The flowers are in spikes, and the calyx when ripe, becoming fleshy, has the appearance of a grape. The bark is astringent, and has been used for tanning leather.

Seaweeds, a general term for the plants comprehended under the order Algæ of the Linnæan class Cryptogamia, known as flowerless plants. It includes not only plants growing in the sea, as the name Seaweed implies, but also in fresh water, and on moist earth, rocks, stone, and living and diseased vegetable substances, in the form of slime and jellies. They vary in form from microscopic bodies to large plants several feet in length. The number of species is extremely numerous, and included by modern botanists in about 300 genera, which are arranged under five distinct natural families. But few are of economic importance; the principal ones will be found noticed under their respective local names.

Sebestens, the name in India for the fruit of *Cordia myxa* and *C. latifolia*, small trees of the Borage family (Boraginaceæ), natives of India. Their fruit, which grows in clusters, consists of a drupe, an inch or more in diameter, yellow when ripe, the pulp of which is soft and clammy. *C. latifolia* is the larger, but both are eaten by the natives.

Sedge.—Sedges, grass-like plants of the Cyperus family (Cyperaceæ), of which there are many species. The principal genus, *Carex*, includes about 66 species, natives of this country. *C. arenaria* grows on the sea-shores, forming hassock-like tufts, which, with its running roots, bind and hold the loose sands (*see* Marrum).

Semolina, or **Semola**.—In some kinds of wheat, especially Italian, the gluten and starch combine in the form of small hard grains, which separate from the flour in the process of grinding, and which come to this country from Italy under the name of Semolina. It is used for puddings and invalids' food.

Senega or Seneka Root. (*See Snake-root.*)

Senna.—*Cassia acutifolia*, *C. angustifolia*, and other allied species, slender annuals of the Bean family (Leguminosæ), about 2 feet high, having winged leaves, which when dry constitute the Senna of the shops. They are cultivated in the regions of the Mediterranean, Egypt, Arabia, and India. Senna is a well-known purgative medicine.

Sensitive Plant. (*See Humble Plant.*)

Service Berry (*Amelanchier canadensis*), a small much-branched tree of the Apple family (Pomaceæ), native of the Northern United States and Canada. When in flower it is a complete sheet of white, and is known in this country by the name of Snowy Mespilus. Its fruit (berries) is black, and of a sweet agreeable taste. Eaten by the native Indians.

Service Tree (*Pyrus domestica*), a large, spreading, branched tree of the Apple family (Pomaceæ), with winged leaves. It bears an oblong or round fruit, about the size of a large gooseberry, which is austere, and not much used. In Brittany a drink like cider or perry is made from it, which has a most unpleasant odour. It is a native of various parts of the Continent, especially France and Italy, where it is much valued for its hard wood, which is used for many purposes. It grows wild in Cornwall, and is considered to be indigenous.

Sesamum, a name for the seeds of *Sesamum indicum*, an annual weed-like herb of the family Pedaliaceæ native of the East Indies, where it is cultivated as well as in other countries for the seeds, which yield a bland oil equal to olive oil. It is used for many purposes of domestic economy. It is also known as Gingelly Oil, and used for adulterating olive and other oils.

Shaddock (*Citrus decumana*), a tree of the Orange family (Aurantiaceæ), native of China. It was introduced into the West Indies early in the eighteenth century by Captain Shaddock, hence its name. There are varieties which produce fruits of various sizes, some measuring nearly 2 feet in circumference. Setting aside size, their appearance is like an orange. The

large ones are known by the name of Pomeloes, and the smaller ones are sold in the shops as Forbidden Fruit. The Shaddock is cultivated in the East and West Indies for the sake of its sub-acid juicy pulp.

Shallon, a name in North-West America for *Gaultheria Shallon*, a low evergreen shrub of the Heath family (Ericaceæ); it has round leaves, and by its underground running shoots covers a considerable area of ground. It generally grows in pine forests, and produces an immense number of purple berries, which are made by the natives into bread. A smaller species, *G. procumbens*, is also a native of North America, and grows like the preceding. Its calyx becomes a fleshy berry, and affords food for game. In the United States it is called Partridge-berry, as also Winter-green. It has a peculiar spicy and aromatic odour, and has been used as a substitute for tea. The odour is due to a volatile oil, which is obtained by distillation, called Winter-green Oil, and is used medicinally as a stimulant. It is also called Mountain Tea, its leaves being used as a substitute or for flavouring genuine tea.

Shallot. (See Rocambole.)

Shamrock, the emblem of Ireland. Supposed to be a species of Clover or Wood Sorrel.

Sheep-pest (*Accæna ovina*), a small evergreen decumbent plant of the Burnet family (Sanguisorbaceæ), native of New Zealand, Tasmania, and Australia, growing in pastures. Its fruit is furnished with hooked spines, which adhere to the wool of sheep, and render it difficult to clean, thus greatly lessening its value.

Shepherd's Club. (See Mullein, Great.)

Shittim-wood, supposed to be *Acacia Seyal*. (See Gum Arabic.)

Shola, or **Solah** (*Æschynomene aspera*), a thick spongy-stemmed plant with compound winged leaves belonging to the Bean family (Leguminosæ). It is a native of India, Malayan Peninsula and Islands, growing in swampy places and even floating. The stem consists of a spongy white pith as thick as the arm, and being very light is used for making

hats, bottle cases, floating jackets, and many other domestic articles.

Herminiera Elaphroxylon, a prickly-branched, compound-leaved tree of the same family, native of tropical Africa, has pith-like wood similar to the Shola, and is used by the natives for like purposes.

Side-saddle Flower.—*Sarracenia*, a genus which gives its name to a small family of plants (*Sarraceniaceæ*), consisting of about 10 species, all with one exception natives of the Atlantic side of North America. They grow in swampy places, and are remarkable for their hollow leaves, which are generally upright, and rise from a central crown or a creeping stem. They are tubular, varying in length from 2 to 6 feet or more, and have a lid resembling the pitcher-plant of India, the width of the mouth being from 1 to 2 inches in diameter. The inside of the tube is lined with curious hairs, and it generally contains liquid that seems to entice insects, many perishing in the fluid, which ultimately becomes putrid. The pistil of *Sarracenia* is curious, being in the form of an open umbrella, with the stigmas at the angles on the under-side of the margin. It is called Side-saddle Flower, from the petals hanging down between the sepals of the calyx like a lady's riding-dress.

Silk-cotton Trees, a name given to certain trees of the Silk Cotton family (*Bombacæ*). They are so called on account of the seeds being involved in silky wool-like hairs firmly packed in a capsular fruit; when this opens the hairs expand and form a considerable woolly mass. As they are not adhesive, and moreover brittle, they cannot be spun, but are used for stuffing cushions and the like. The trees are large, and are represented in the tropics of both hemispheres.

Silk-cotton Tree of the Amazon (*Eriodendron Samauma*).—This is one of the buttress trees of the region of the Amazon, some of the buttresses projecting 8 or 10 feet and only 4 or 5 feet high, while narrower ones rise to 20 or 30 feet in height, and continue as ribs to a height of 40 or 50 feet. They are from 6 inches to a foot in thickness, and are like wooden walls,

of sufficient width between them to allow room for a comfortable hut. The wood is very soft, and large pieces are cut out for paddles and other uses. Another use of these trees is that they are hollowed out and formed into canoes. Immense casks are also made of them. One is recorded to have been 27 feet in length, and so thick that a man standing inside could work with an axe in hollowing it out. They are employed for conveying oil and other products from the upper region of the Amazon, being floated down to Para.

Silk-cotton Tree, Brazilian (*Pachira macrantha*), a Brazilian tree, attaining a height of 100 feet, and having flowers 15 inches in length. The outside of the petals is green, and white within, with numerous long scarlet stamens.

Silk-cotton Tree, Malabar (*Bombax malabaricum*), a tree, native of Malabar and other parts of India, attaining a height of 70 or 80 feet, and its stem is covered with prickly tubercles similar to the *Eriodendron anfractuosum* of the West Indies. The flowers are red, produced in clusters, and its fruit contains silky hairs which are used for stuffing cushions; the wood is light and porous; the bark possesses emetic properties, and yields a pure gum.

Silk-cotton Tree, New Grenada (*Pachira alba*, better known in botanical collections in the country by the name of *Carolinea alba*), a moderate-sized tree common in New Grenada, where it is one of the most useful trees, the inner bark furnishing a strong and durable cordage much valued throughout the country. There are other species of *Pachira* in tropical America, the bark of which is in general use as cordage.

Silk-cotton Tree, West Indian (*Eriodendron anfractuosum*), a tree attaining a height of 100 feet or more, having an imposing appearance, whether overtopping its humble companions of the forest or rising in solitary grandeur on the open plain. Even the untutored negroes are so struck with the majesty of its appearance that they call it the God Tree. Not even from the fear of punishment will they be induced to cut it down. Its bark is green and covered with rough tuberculated prickles. It

tapers upwards from a swollen base, around which are thick projecting buttresses of sufficient width to allow of horses being stalled between them. The natives call it Ceiba.

Silky Oak (*Grevillea robusta*), a tree of the Protea family (Proteaceæ), native of Queensland, and probably one of the loftiest trees of the family; it attains a height of from 50 to 150 feet, with a diameter of from 6 to 8 feet; its timber is valuable. A plant introduced into Kew in 1826 has attained a large size, and with its much-divided silky leaves presents a strong contrast to the more humble species of the genus, which mostly consist of small shrubs with willow, holly, box, or juniper-like leaves, producing pretty spikes of flowers.

Silphium of the Ancients. (*See* Carrot, Deadly.)

Silphium of Linnæus. (*See* Compass Plant.)

Silver Fir (*Picea pectinata*), a tree of the family Coniferae, native of Europe and Northern Asia. It takes its name from its silvery white leaves, and attains a great height, it is even said above 200 feet, and when standing singly is a beautiful tree. A resin is obtained from it, which when purified is called Strasburg Turpentine. The Silver Fir is subject to a disease, especially in Switzerland, which is caused by a fungus, a species of *Æcidium*, similar to the corn mildew.

Silver Rod. (*See* Asphodel.)

Silver Tree (*Leucadendron argenteum*), a small tree of the Protea family (Proteaceæ), with beautiful silvery lance-shaped leaves, native of Table Mountain and the Cape of Good Hope. Its vicinity to Cape Town has led to its almost complete extirpation for firewood. Its destruction, however, is now prohibited.

Simaruba Bark. (*See* Quassia.)

Sissoo, a name in India for *Dalbergia Sissoo*, a tree of the Bean family (Leguminosæ), common in Bengal, and extending northward to the Punjab. It is a fast-growing tree, attaining a considerable size. Its timber is strong, compact, and tenacious, of a dark-brown colour, and is used in all works where strength and durability are required.

Skirrit (*Sium Sisarum*), a perennial herb of the Carrot family

(Umbelliferae), native of China, introduced more than 300 years ago, and cultivated as a vegetable ; the root, which is like a radish, and about the thickness of the finger, is the part used. It is now seldom seen.

Skunk Cabbage (*Symplocarpus fetidus*), a perennial plant of the Arum family (Aroideae) ; it has simple leaves, the flowers are contained in a spathe, which has a fetid smell like the animal called the skunk. It is a native of North America, where it is held in medical reputation, its roots and seeds in cases of coughs, and its leaves in healing ulcers.

Slipper Flower. (See *Calceolaria*.)

Sloak, or Slook. (See *Laver*.)

Sloe, also called Blackthorn (*Prunus spinosa*), a rigid prickly shrub of the Plum family (Drupaceae) growing in hedges in this country, its pretty white flowers making it very ornamental in the month of May. Its fruit is harsh, and too austere to be eaten ; in Germany a spirit is distilled from it. Its wood is hard and takes a fine polish, and is used for walking-sticks, and for making handles for carpenters' and other tools. The leaves when dried make the best substitute for Chinese tea, and were at one time extensively used in its adulteration.

Smut (*Ustilago segetum*), a dust fungus common to the Grass family (Gramineae) ; it affects wheat, barley, oats, Indian corn, and dhoora, often doing considerable damage to the crops. It destroys the young grain in the ear, which becomes a sooty mass of closely-packed fungus spores, which ultimately break up, and are dispersed by the wind or fall to the ground, where they are ready to attack and impregnate the sprouting grains of the next year's crop. Experiments made by the celebrated microscopist and botanical artist Francis Bauer show that the spores are absorbed into the tissues of the plant, and carried up until they reach the ear, where they develop and multiply to the destruction of the grain.

Allied to the preceding is another grain-destroyer called Bunt or Pepper Brand (*Ustilago foetida*) ; like the preceding, it is common to corn crops, but in this case the ear is only

partially affected, some of the grains being left perfect while those affected become filled with dust of a fetid odour, distinguishing it from the Smut or dust brand, which is scentless.

A Smut also infests the common reed (*Arundo phragmites*), which is common in the marshes of the Thames, and which is used for many domestic purposes. The persons who cut them suffer from headache, a swelling of the head, and acute inflammation of the bowels, which is caused by the fungus.

Snake Gourd (*Trichosanthes anguina*), a tendril climber of the Gourd family (Cucurbitaceæ), native of India; its fruit is cylindrical, about 3 feet in length, and is pendulous, having the appearance of a snake; but it is surpassed in length by *T. colubrina*, called the Serpent or Viper Gourd; it attains a length of 5 or 6 feet, and a diameter of about an inch, and hangs from the plant in a rope-like form. It is of a yellow colour when ripe.

Snake - nut (*Ophiocaryon paradoxum*), a large tree of the order Sapindaceæ, native of British Guiana. The fruit is roundish, about the size of a walnut. It takes its name Snake-nut from the curious form of the embryo of the seed, which is spirally twisted so as to closely resemble a coiled-up snake. They are not known to possess any medicinal properties, but the snake-like form of the embryo has led the Indians to employ it, and believe it to be an antidote against snake-bites.

Snake-root.—Many plants are held in high repute as a cure for snake-bites, but they seldom prove efficacious when put to the test by learned medical practitioners, their reputation being often derived from the snake-like form of the whole or some part of the plant, or from its colour. The following are a few of the principal:—

1. *Ophiorrhiza Mungos*, a low bushy shrub of the Cinchona family (Cinchonaceæ), native of India, Ceylon, and Malayan Islands. Its roots are intensely bitter, and some degree of superstition is attached to its first discovery as a cure for snake-bites.

2. Brazil (*Chiococca angustifolia*), a plant of the same order, called Snake-root, or Raiz de Cobra in Brazil. It is a violent

emetic and purgative, and has a musky smell like that of snakes, which favours the idea that it cures their bite.

3. *Casearia ulmifolia*, a shrub or small tree of the family Samydaceæ. The leaves are somewhat astringent, and when boiled are applied to wounds and snake-bites. They are considered by Brazilians a certain remedy against the bite of the most venomous kinds of snakes. Several other species of *Casearia* are used medically in Brazil, either for cleansing wounds or as diaphoretics and purgatives.

4. *Polygala Senega*, an erect, slender, herbaceous plant of the Milkwort family (Polygalaceæ), native of North America. The root is ash-coloured, and supposed by the Indians to resemble the tail of the rattlesnake, and to be a cure for its bite. In the United States it is employed for many complaints. It contains a principle called Senegin, which excites violent sneezing.

5. Black Snake-root (*Actæa racemosa*), a tall-growing perennial herb, with compound trifoliate leaves, of the Buttercup family (Ranunculaceæ). The flowers are fetid, and the large knotted root-stalks, which have a nauseous astringent and bitter taste, are considered in the United States to be a remedy for the bite of the rattlesnake.

6. Button Snake-root.—*Liatris squarrosa* and *L. scariosa*, perennial herbs, with spikes of pretty pink flowers of the family Compositæ; natives of North America. Their tuberous roots when bruised are considered a cure for the bite of the rattlesnake.

7. Virginian Snake-root (*Aristolochia Serpentaria*), a bushy partially climbing shrub of the Birthwort family (Aristolochiaceæ), native of the Southern United States. It is considered a specific for the cure of the bite of the rattlesnake and of mad dogs; also, *Gentiana ochroleuca*, a perennial of the Gentian family (Gentianaceæ). It is held in high reputation by the "old grannies" as a tonic, and as an excellent stimulant in uterine disorders, loss of speech, and other complaints through the loss of nervous energy. It is also one of the numerous remedies for the cure of snake-bites.

Snake-wood (*Strychnos colubrina*), a small tree of the Nux Vomica family (Loganiaceæ), native of India, Java, and other islands. In Malabar it furnishes the wood called Snake-wood. It is in great repute as a remedy for the bites of snakes and in skin diseases. (See also Greenheart and Letter-wood.)

Sneezewort (*Achillea Ptarmica*), a low herbaceous herb of the Composite family (Compositæ), common in this country. Its leaves are numerous and finely divided, forming a tuft; the flower-stems are about a foot in height, bearing heads of white flowers about the size of a daisy; its leaves, when dried and pulverised, are said to excite sneezing.

Sneeze - wood (*Pteroxylon utile*), a small tree of the Soapberry family (Sapindaceæ), native of the Cape of Good Hope. The wood is hard and durable, takes a fine polish, and is used for many purposes. In sawing the wood the dust excites violent sneezing.

Snowberry (*Symphoricarpos racemosus*), a bushy shrub of the Woodbine family (Caprifoliaceæ), native of North America. It is planted as an ornament in shrubberies, producing white berries, conspicuous in autumn.

Snowdrop Tree (*Halesia tetraptera*), a wide-spreading branching tree of the Storax family (Styracaceæ), attaining a height of from 20 to 30 feet, native of North America. It produces a profusion of pendulous white flowers like snowdrops, which render it a highly ornamental tree.

Snuff. (See Tobacco.)

Soap Bark, also the bark of *Pithecolobium bigeminum*, a large tree of the Bean family (Leguminosæ). It is saponaceous, and is used as a substitute for soap in Caraccas. (See also Quillaia.)

Soapberry (*Sapindus Saponaria*), a slender tree, with winged leaves, of the Soapberry family (Sapindaceæ), native of the West Indies and many parts of tropical America. Its fruit is the size of a large gooseberry, formed of a thick tough rind, loosely enclosing a hard globose black seed. It takes the name of Soapberry from the rind on being put in water lathering like soap. It has long been in general use in the West Indies as a substi-

tute for soap. Its frequent use is, however, considered to deteriorate fabrics washed with it. The hard seeds take a fine polish, and are used for making rosaries and necklaces, and at one time were imported for making buttons. In India the same use is made of the seeds of *S. trifoliatum* and *S. Rarak*, now known as *Dittelasma Rarak*. A medicinal oil is extracted from the former. *Erioglossum edule* (*S. rubiginosa*) is a tall tree of the Pegu forests, having a girth of 3 to 4 feet. Its wood is white. *S. esculentum* is a native of Brazil, attaining a height of 30 to 40 feet. Its fruit is produced in bunches like grapes; the rind is hard, but between it and the seed is a mucilaginous pulp which is eaten.

Soap Bulb (*Chloragalum pomeridianum*), a large bulb of the Lily section of the family Liliaceæ, native of California. It is used as a substitute for soap, its mucilage producing a lather in water; but it contains neither alkali nor oil.

Soap Pods.—In China the pods of several species of *Cæsalpinieæ*, and in India the pods of *Acacia concinna*, are of a saponaceous nature, and are used as a substitute for soap.

Soap-root (*Gypsophylla Struthium*), a strong-rooted, many-stemmed perennial of the Pink family (Caryophyllaceæ), native of Spain, spreading a foot or more in height. Its root lathers water, and is used as a substitute for soap.

Soapwort (*Saponaria officinalis*), a strong-growing perennial of the Pink family (Caryophyllaceæ); it is common in gardens. It is said to be a native of Britain, but if so it is very rare. The stems upon being put in water form a lather like soap, hence its name.

Soldier's Herb. (See Matico.)

Solomon's Seal (*Polygonatum multiflorum*), a perennial herb of the Lily family (Liliaceæ), a plant found wild in many parts of England, and frequently cultivated in gardens. Its creeping roots or rhizomes are in great repute, as they quickly remove bruises and discolorations of the flesh resulting from blows.

Sophee, a name in the mountain regions of India for *Myrica integrifolia*, a shrub of the Candleberry family (Myricaceæ). Its fruit is eaten by the natives.

Sophora (*Sophora japonica*), a branched round-headed tree, attaining a height of 40 feet, having winged leaves of a light-green colour. It belongs to the Bean family (Leguminosæ), and is a native of China and Japan, where its white papilionaceous flowers are used for dyeing both yellow and green. In Fokien and other provinces it is cultivated for its flowers, which form an important article of trade in the country. A purgative property pervades the whole of the tree, even affecting, it is said, those who prune it, or work with the wood. It is an ornamental tree in this country, but not common. It was introduced in 1763; there are several specimens in Kew Gardens more than a hundred years old.

Sorrel, Common (*Rumex Acetosa*), **French** (*R. scutatus*), perennial herbs of the Buckwheat family (Polygonaceæ), the first native of this country and the second of Switzerland. Cultivated in gardens for their leaves, which are acid, and used as culinary herbs. In Scotland the Common Sorrel is called Souroks.

Sorrel Tree. (See Andromeda.)

Sorrel, Wood (*Oxalis Acetosella*), a small perennial herb of the Oxalis family (Oxalidaceæ), native of Britain, growing wild in woods. The leaves, which are trifoliate, are sometimes used in salads, to which they impart a pleasant acid. It is one of the plants supposed to be the Shamrock of Ireland. Its medicinal properties led it to be worthy of a place in the London Pharmacopœia, but it has now fallen into disuse.

Souari Nut, also known as Butter-Nut (*Caryocar nuciferum*), a tree of the family Rhizobolaceæ. It is a native of British Guiana, and attains a height of 80 to 100 feet, having large broad trifoliate leaves. Its flowers are large and spreading, and contain a large number of stamens. The fruit is spherical, firm, measuring 5 to 6 inches in diameter, and of a reddish-brown colour. It contains four, or by abortion generally fewer seeds, which lie embedded in a white pulp. They are round, sub-reniform, and flattened. The shell is hard, of a brown colour, and covered with tubercles; it contains a nutty, oily kernel, which is pleasant to eat, and is frequently imported into this country under the above name. *C. butyrosu*m is a tree similar to the last, but

differing in the leaves being five-parted, and also in producing edible, but more oily nuts, called Pekea.

Sour Gourd. (*See* Baobab.)

Sour Plum, a name given in Queensland to *Owenia venosa*, a tree of the Bead Tree family (Meliaceæ), said to have milky juice (?). It has clammy branches, winged leaves, and small flowers produced in panicles. The fruit is a globular drupe; the pulp is wholesome, slightly acid, and is eaten by the natives. The wood is hard, very strong, of a reddish colour, and is used for wheelwrights' work. The wood of *O. cerasifera* is also hard, and takes a fine polish. It is called the Sweet Plum, and forms an important article of trade in China. Living plants have been recently introduced into this country, but are too tender to grow in the open air.

Sour Sop, or **Custard Apple** (*Anona muricata*), a tree of the Custard Apple family (Anonaceæ), 15 to 20 feet high, native of the West Indies and tropical America, and cultivated for its fruit, which varies in size from 6 to 9 inches in circumference; the form also is variable, but the heart shape predominates, as indeed it does in most of the fruits of the other species. Its pulp is woolly in appearance, but contains a fresh and agreeable sub-acid juice.

Southernwood (*Artemisia Abrotanum*), a well-known garden shrub of the Composite family (Compositæ), much in favour for its stimulating aromatic odour. It is a native of Southern Europe, and is known also by the name of Old Man.

Sowa, a name given in Bengal to *Peucedanum graveolens*, better known as *Anethum Sowa*, an annual of the Carrot family (Umbellifereæ), cultivated in India, especially in Bengal, for its carminative seeds, which are used for culinary purposes; by distillation the seeds yield a very useful medicinal oil, also known as Bishop's Weed Oil.

Soy (*Glycine Soja*, better known as *Soja hispida*), a small, erect, trifoliate, hairy plant of the Bean family (Leguminosæ), native of India and China. It is cultivated for its seeds, which are made into the sauce called Soy in India, and the residue or cake is extensively used for manure in China.

Spætlum. (*See Bitter-root.*)

Spanish Elm, a name in the West Indies for *Cordia Gerascanthus*, a large tree of the Sebesten family (Cordiaceæ), native of the West Indies. Its wood is hard, and used for many purposes.

Spanish Juice. (*See Liquorice.*)

Spearmint (*Mentha viridis*), a herb of the Mint family (Labiatae). It possesses aromatic properties, and is used for culinary purposes, especially as a sauce, and is supposed to be the Mint spoken of in the New Testament. It is a native of this country.

Spelt (*Triticum Spelta*), a corn-grass, intermediate between barley and wheat, but considered to be a hard-grained kind of the latter. It is supposed to be the rye grown in Egypt in the time of Moses. It is sparingly cultivated in France and other parts of Europe at the present day.

Spice Wood.—*Laurus Benzoin*, now called *Benzoin odoriferum*, a genus of the Laurel family (Lauraceæ). *B. odoriferum*, native of North America, is a bush 8 to 10 feet high, having oblong wedge-shaped leaves and small umbels of yellow flowers, appearing before the leaves. Its fruit is a berry. It is said to have been used in the United States as a substitute for allspice; it yields an aromatic stimulant oil. The bark is aromatic, stimulant, and tonic.

Spiderworts, a common name for *Tradescantia*, a genus of the family Commelynaceæ. *T. virginica* and others are showy garden perennials, with white or blue flowers. The filaments of the stamens are jointed, and viewed under a microscope the circulation of the sap in each joint is seen.

Spikenard, or **Nard** (*Nardostachys Jatamansi*), a perennial herb of the Valerian family (Valerianaceæ), closely allied to the common Valerian (*Valeriana officinalis*), but the roots have a much stronger smell. It is a native of Nepal, Bhotan, and other parts of the Himalayan Mountains. In India its roots are highly prized as a perfume for the hair; and there is every reason to believe that the "alabaster box of ointment of Spikenard"

mentioned in St. Mark was prepared from this plant. It appears to have been early known in Europe, and history tells us it was a favourite with the ladies of Rome; but it has long ceased to be used, its smell being considered disagreeable to modern taste.

Spinach, Garden (*Spinacia oleracea*), an annual plant, the type of the Spinach family (Chenopodiaceæ). The native country of the Garden Spinach is not well ascertained, but is supposed to be Western Asia; it has been known in this country for at least three hundred years. There are two kinds, one with smooth and the other with prickly seeds. Both are cultivated, and used as a vegetable.

Spinach, Australian.—*Chenopodium auricomum*, native of the interior of Australia. It is allied to *C. hybridum*, a weedy plant of this country. It has lately come into use as a substitute for Spinach.

Spinach, Indian.—*Basella rubra* and *B. alba*, succulent climbers, with soft, entire, alternate leaves, of the family Basellaceæ, but considered by some to be a section only of the Spinach family (Chenopodiaceæ), natives of the East Indies, generally cultivated for shade as arbour plants. In *Hortus Kewensis* they are called Malabar Nightshade.

Spinach, Mountain, or Garden Orache (*Atriplex hortensis*), native of Eastern Europe. It is a hardy annual plant of the Chenopodiaceæ, growing 2 to 3 feet high, having large hastate leaves, varying from light green to dark red, which are sometimes used as Spinach. They seed freely, the red-leaved kind becoming a weed in some gardens.

Spinach, New Zealand (*Tetragonia expansa*), a trailing branch-stemmed annual, several feet in length, with Spinach-like leaves, of the Fig Marigold family (Ficoideæ). It was discovered in New Zealand during Captain Cook's first voyage, and was much prized as a fresh vegetable amongst the crews, and was considered efficacious as an antiscorbutic. It is also common to Australia, Tasmania, Japan, and South America. It was introduced into this country in 1772, and in some gardens it is substituted for Spinach.

Spindle Tree (*Euonymus europæus*), a lowspreading tree of the family Celastraceæ, native of this country, generally found growing in hedges or on the margins of woods. The wood is compact, capable of being split into very fine strips, and is used by watch-makers in cleansing watches, and is known to them by the name of Dogwood; it is also said to be used for shoe pegs, skewers, and such like.

Spiræa frutex, an old garden name for *Spiræa salicifolia*, a shrub of the Rose family (Rosaceæ), native of some localities in Scotland, Northern England, and Wales, one of a numerous genus of pretty garden shrubs, natives of the temperate zone of the northern hemisphere. The genus also contains many herbaceous species, such as the well-known Meadow-sweet (*S. Ulmaria*) and the Dropwort (*S. Filipendula*), both natives of this country, and the strong-growing garden perennial *S. Aruncus*, native of Austria and Siberia. No special economical uses are recorded of any of the species.

Spotted Tree, a name in Queensland for *Flindersia maculosa*, a tree of the Mahogany family (Cedrelaceæ). It derives its name from the bark falling off in small pieces, which makes the trunk appear as if it were spotted.

Spruce Fir. (See Fir Trees.)

Spurge. (See Euphorbia.)

Spurge Laurel (*Daphne Laureola*), a pretty evergreen shrub of the family Thymelæaceæ, with poisonous berries, native of this country. Other species of the genus are highly-ornamental garden plants. *D. indica* and *D. odora* are prized in the greenhouse for their sweet smell.

Squash. (See Gourd.)

Squill (*Scilla maritima*), a bulbous plant of the Lily family (Liliaceæ), found on the coasts of the Mediterranean, and also abundant at Malta, from whence it is imported. It is used in medicine, being a powerful irritant, and is prescribed in dropsical and other complaints.

Squirting Cucumber (*Ecballium Elaterium*).—This plant has the same habit and appearance, and belongs to the same family

as the Cucumber (Cucurbitaceæ), trailing on the ground, but devoid of tendrils. It is a native of the South of Europe, and has long been cultivated in botanic gardens as a curiosity. The fruit is about 2 inches in length, hanging down at an acute angle with the short foot-stalk; on touching it when ripe, it immediately separates from the stalk, and ejects with considerable force a number of seeds and a quantity of fluid to a distance of two or three yards, to the dismay of the unwarned toucher. The juice is of a highly poisonous nature, and when concentrated forms the powerful drug called Elaterium, which is obtained by pressure of the seeds.

St. Helena Ebony. (*See* Ebony.)

St. John's Bread. (*See* Carob Tree.)

St. Thomas Tree, a name in Ceylon for *Bauhinia tomentosa*, a small tree of the Bean family (Leguminosæ). It attains a height of 15 feet, and is bush-like. Its leaves are composed of two oval, blunt leaflets, united by their inner edges for more than half their length. It has pale yellow flowers with crimson spots, which the native Cingalese believe to be the blood of St. Thomas, hence its name.

Staff Tree, a name for the different species of *Celastrus*, a genus of the Spindle Tree family (Celastraceæ). *C. scandens*, a trailing, climbing shrub, native of North America, interesting on account of its orange-coloured fruit, and wax-like arillus, hence it is called Waxwork Shrub. *C. paniculatum*, native of Brazil. An empyreumatic oil is obtained from its seeds by destructive distillation, called *Oleum nigrum*. It is in repute by native doctors for special complaints. *C. pyracanthus*, native of the Cape of Good Hope, has hard, very formidable spines 3 to 4 inches in length. *C. cymosus*, also native of the Cape of Good Hope, has pretty white flowers, but of a very fetid odour.

Staghorn Fern is represented by several species of *Platy-
cerium*, a genus of the tribe Acrosticheæ of the family Filices, the original species being *P. alvicorne*, native of Western tropical Africa and Australia, from whence it was introduced into Kew in 1808. Its broad, divided fronds, having the resemblance of a

stag's horn, long caused it to be looked upon as a curiosity in the plant world; but it is now surpassed by its gigantic ally *P. grande*, native of Queensland, the Philippine Islands, and Malayan Peninsula. It is epiphytal. Its barren fronds may be compared to large shells successively produced from a central axis, the new overlapping the old, forming oblong masses of various sizes according to age; sometimes as much as 3 feet by 2, and 2 to 3 feet in thickness. The fertile fronds rise from the central axis to the length of 6 to 7 feet, repeatedly forked into broad ribbon-like segments, and pendulous, the fructification being produced in a round, lateral lobe, nearly a foot in diameter, on one of the main divisions of the frond. It was introduced from New Holland into Kew in 1842, and fine specimens are now to be found in the collections of many fern-cultivators.

Star Apple (*Chrysophyllum Cainito*), a tree of the family Sapotaceæ, attaining a height of 30 to 40 feet, native of the West Indies. It has spreading branches, and beautifully-veined leaves, of a silvery white on the under side. The fruit is about the size of an apple, and is wholesome, having an agreeable sweet flavour. It consists of ten cells, each containing a single seed, and when cut across (before the seeds harden) has a star-like appearance, hence its name. It is an ornamental plant in hothouses.

Star of Bethlehem (*Ornithogalum umbellatum*).—This is one of the Lily family (Liliaceæ), native of different parts of Europe and Western Asia, also of this country. Its flowers are of a milky white, borne in umbels on a short stalk, and it is probably on this account that it has received the name *Ornithogalum*, which literally means bird's milk. There is strong evidence for believing, as I have shown in my *History of Bible Plants*, that the bulbous root of this plant was the doves' dung that was eaten by the people of Samaria, as stated in 2 Kings vi. 25.

Star Jelly.—*Nostoc commune* and *N. edule*, gelatinous cryptogams of the Confervæ family, springing up often on gravel walks after rain in round patches. *N. edule* is wholesome, and in

China is dried and used in making soups. In 1855 several square miles in the Bombay Presidency were covered with *N. collinum*. The natives called it meat, and considered that it fell from heaven. The spores are supposed to float in the air, and alighting on congenial surfaces where the temperature and moisture are favourable, spring suddenly into existence as the perfect plant. *N. commune* is also known by the name of Fairies' Butter.

Starch consists of organised, farina-like grains, contained in various parts of many plants. It forms an important part in all farinaceous foods, as wheaten flour, potatoes, arrowroot, sago, etc. It is, however, incapable of sustaining animal life when separated from other constituents; but with the addition of some nitrogenous substance, it is wholesome. Starch granules when burst by the effects of heat are turned into gum, and form the substance known as Dextrine or British gum, which is used for dressing woven fabrics, for the backs of postage stamps, and for envelopes.

Stavesacre (*Delphinium Staphisagria*), a strong-growing biennial of the Buttercup family (Ranunculaceæ), native of the South of Europe. Under this name it was held in high repute by the ancients as a cure for many diseases. The active principle is contained in the seeds, which have a disagreeable smell, and a nauseous, bitter, burning taste. They yield an alkaloid called Delphinia.

Stavesacre was originally employed as a cathartic, but it acted with so much violence that it has been to a great extent laid aside, and is now chiefly employed for eruptions in the skin, for destroying lice, and as a cure for the itch insect. Delphinia is an extremely acrid poison. Six grains, administered in water, will kill a dog in three hours; but the same quantity dissolved in vinegar has caused death in forty minutes.

Stinging Bush (*Jatropha stimulans*, sometimes called *J. horrida*), a small, straggling, soft-wooded shrub of the Spurge-wort family (Euphorbiaceæ), with lobed leaves, covered, as well as the younger parts of the wood, with stiff hairs, like small

needles, which sting fearfully, and are much dreaded by the natives. It causes an intense burning pain, with swelling, which is not confined to the part stung, but sometimes spreads all over the body. In 1823 a plant at Kew stung the writer on the wrist, and in a few minutes the poison extended up the arm and the upper part of the body, the lips became swollen, and of a livid red; fainting came on in less than ten minutes, on recovering from which, the whole sensation went off as fast as it came on. The general health was, however, impaired for several days.

Stink-horn, or Stinking Polecat.—*Phallus impudicus* and *P. foetidus*, fungi of the Lycoperdaceæ alliance. They have a white conical pileus, 4 to 6 inches high, purple at the apex. They spring up suddenly during the night from a volva. They grow in damp, shady places in woods, and their place of growth is readily found by the abominable stench they emit. An allied species is *Clathrus cancellatus*, the Lattice Stink-horn. Although beautiful in appearance, its odour is the most disgusting and noxious of all fungi.

Stinking Gladwyn. (*See Iris.*)

Stink-wood (*Fœtidia mauritiana*), a large tree of the family Barringtonaceæ, native of the Mauritius, where, on account of the white ants not attacking it, it is used for the foundations of houses. Its wood has an unpleasant smell. For other Stink-woods, *see* Laurel.

Storax.—This name is generally applied to the resin of *Styrax officinale*, a small tree of the Benzoin family (Styraceæ), native of Greece, Asia Minor, and Syria; now found also in Italy and Southern France. It is only when the plant has attained its full size that it seems capable of yielding the fragrant resin known as Storax; and Fluckiger and Hanbury in their *Pharmacographia* say that in most localities where it is grown “it has been reduced by ruthless lopping to a mere bush, the young stems of which yield not a trace of exudation. The storax has thus entirely disappeared, and genuine specimens of it are scarcely to be found even in museums.” The plant is considered by some commentators to be the poplar rod of

Jacob, but its nature of growth is such that its branches can scarcely be called rods. Liquid Storax is furnished by *Liquidambar orientalis*, a small tree of the family Hamamelideæ, native of Asia Minor, as also by *L. altingia*, a tree native of the Malayan Archipelago.

Stramonium. (*See* Datura.)

Straw, the culms (flower-stalks) of wheat, barley, oats, and rye, which, after being deprived of their grains, furnish the straw used for many purposes in domestic economy—such as thatching, making baskets, beehives, cradles, hassocks, and mats, as also hats and bonnets, the latter being generally made of wheat straw, which forms an important part of the occupation of the people of St. Albans, Dunstable, and Luton. The large fashionable bonnets worn fifty years ago, which came from Italy, and were called Leghorn bonnets, were made of *Triticum Spelta*. (*See* Spelt.)

Their high price, £2 each, led the celebrated political writer William Cobbett to endeavour to find a native grass capable of making as fine bonnets as the expensive Leghorn. He selected the sweet-scented vernal grass *Anthoxanthum odoratum*. He employed two women to collect it in Kew Gardens, but the project proved a failure. The large sun-hats of India are made of wheat straw.

Strawberry.—*Fragaria vesca* and *F. elatior*, perennial herbs of the Rose family (Rosaceæ). These are the wild or native strawberries of this country. They were the only ones known in early times. The cry "Strawberry ripe" was to be heard in London 400 years ago. After the introduction of *F. virginiana* from North America, *F. chilensis* from South America, and *F. grandiflora* from Surinam, by crossing them with the native species many fine varieties were obtained, such as the Alpine, hautbois, scarlet, pine, and others. Of late years much attention has been paid to the cultivation of strawberries, and fruits of the size of small apples are now to be seen at horticultural exhibitions. Before the time of railways and light spring vans, strawberries were conveyed to the London markets

in baskets carried by women on their heads. These carriers were principally from Shropshire, and found employment in the market gardens in the neighbourhood of London during the summer season; and it was a curious sight to see twenty or thirty Shropshire girls, as they were called, marching along in a line with their baskets sitting freely on their heads. It is proper to explain that the fruit of the strawberry, so called, is not a fruit but a fleshy receptacle, the so-called seeds seated on the outside of the pulp being the true fruits. The strawberry is one of the most wholesome of fruits. Besides being eaten fresh by all classes during the season, immense quantities are made into jam and preserves, one firm in London in 1873 using 200 tons.

Strawberry Tree. (*See* *Arbutus*.)

Strelitzia, a genus of the Banana family (*Musaceæ*), natives of South Africa. They possess no economic properties, but are remarkable plants. 1. *Strelitzia augusta* has a palm-like stem, in its native country attaining a height of 20 or more feet, and a foot in diameter. It has large distichous leaves, the general habit of the plant being similar to that of the Traveller Tree (*Urania*). It produces its flowers in a sheath at the base of the leaves; they are small, white, and inconspicuous, considering the magnitude of the plant. Its stem is not solid as in that of the Traveller Tree, and both in its native country and under cultivation, when attaining above 20 feet in height, its weighty crown of leaves causes it to break over. A plant at Kew being supported attained the height of 34 feet, and was still progressing when it was ordered to be cut down. The seeds, like those of *Urania*, are furnished with a woolly arillus, those of *Strelitzia* being red, and those of *Urania* blue. 2. *Strelitzia reginae*.—This differs entirely from the preceding in having no arborescent stem. It has firm, oval, elliptical, glaucous leaves, borne on long foot-stalks, about $3\frac{1}{2}$ to 4 feet high, which rise direct from the ground in cæspitose tufts. The flower-stem also rises direct from the ground, bearing on its apex an open sheath, containing many flowers of orange and purple tints, which, with the peculiar form, make the plant very attractive.

It has been long cultivated at Kew, and derives its name from the late Queen Charlotte, who was princess of the house of Mecklenburg Strelitz.

Stringy Bark. (*See* Eucalyptus.)

Strychnine. (*See* Nux Vomica.)

Succory, a name for Chicory (which see).

Sugar is the sweet constituent of plants found in more or less abundance in their sap or juice, from which, by undergoing certain processes of manufacture, the common, raw, and lump sugar of domestic use is obtained. The principal supply is furnished by the Sugar Cane (*Saccharum officinarum*), a strong cane-stemmed grass 10 to 12 feet high, producing a large feathery plume of flowers. It is a native of the eastern hemisphere, but, like many other plants that have been long under cultivation, the cradle of its birth is not well known. It is found wild, as well as cultivated, throughout tropical and sub-tropical Asia, and the islands of the Indian and Pacific Oceans. It was first known in India, from whence it is said to have been brought to Europe by the Venetians about the middle of the twelfth century, and was early cultivated in the islands of the Mediterranean. It was afterwards introduced into Spain and Portugal, and also to the continent of America, becoming firmly established by the middle of the sixteenth century. It has acted an important part in the social condition of the world, the native Indian race, especially in America, being driven before it, and the curly-haired African negro established in his place, originally under the bonds of slavery. The great supply of sugar imported into this country comes from the West Indies and Brazil, as also from Mauritius, of which island it forms the staple product. Sugar is the expressed juice of the cane, which by boiling and other processes becomes crystallised, and is called Brown Sugar; after being refined and cast in conical moulds it is Loaf or Lump Sugar. The uncrystallised portion is called Treacle or Molasses. From the scum and rough portions of the latter rum is obtained by distillation. The sugar-cane is probably the sweet cane from a far country,

spoken of by the prophet Jeremiah (chap. vi. 20). In Europe large quantities of Sugar are manufactured from Beetroot, and in America from the Sugar Maple. Grape Sugar produced from the fruit of the grape is also a well-known article ; an account of these will be found under their respective names ; also see Date and Wine Palms.

Sugar Berry. (*See* Nettle Tree.)

Sumach.—Under this name are included the species of *Rhus*, a genus of Anacardiaceæ. They consist of bushy, stiff-branched shrubs, with winged, rarely simple leaves, and bunches of inconspicuous flowers, followed by small berries ; they are mostly poisonous in a more or less degree, and highly astringent ; they are used for tanning. *B. Coriaria*, a shrub with pinnate leaves, is common to all the coasts of the Mediterranean, and is extensively cultivated in Sicily for its leaves, which, with the young shoots cut when a foot or more in height, are ground between millstones into a fine powder. It is used for tanning, and also produces a yellow dye. An average of 10,000 to 18,000 tons is annually imported into this country. *R. Cotinus* is also employed in the same manner ; it is called Venice or Venetian Sumach (*see* Fustic). Several North American species are highly poisonous, such as *R. venenata*, a shrub with winged leaves, and the trailing and climbing three-leaved species *R. Toxicodendron* and *R. radicans*, known as the Poison Oaks ; the mere rubbing or handling of the leaves of which has been known to lead to serious consequences.

Sumach, Jamaica (*R. Metopium*), a strong-growing shrub, native of Jamaica ; its leaves are used for tanning ; it yields a gum called by the negroes Doctor's Gum ; it is a powerful purgative and emetic.

Sumach, Myrtle-leaved. (*See* Coriaria.)

Sumach, Virginian (*R. typhina*), is commonly to be seen in shrubberies, especially in old gardens in this country ; cases are recorded of much injury having been done to the eyes from its fumes on being burnt. It is also commonly known by the name of Stag's-horn Sumach.

Sumbul, a name of a spongy root, smelling strongly of musk, known to druggists to come from Russia, and supposed to be the root of an umbelliferous plant; but what plant was not known until 1869, when Mr. Kaufmann, a Russian explorer, discovered it growing on the mountains of Russian Turkestan, and proved it to belong to the above-named family. He succeeded in introducing it into the Moscow Botanic Gardens, from whence it came to Kew. It has been described as a new genus under the name of *Euryangium Sumbul*; it is now referred to the genus *Ferula*, and called *Ferula Sumbul*. Its root comes to this country in pieces, varying in size from $2\frac{1}{2}$ to 5 inches in diameter; it is valued as a medicine, being stimulant and highly antispasmodic.

Sumpunghée. (*See* Champaca.)

Sun Flower (*Helianthus annuus*), an annual of the Composite family (Compositæ), bearing large terminal, flat, circular flower-heads, sometimes a foot in diameter, having yellow rays. It is said to be a native of Mexico and Peru, and to have been introduced into this country at the end of the sixteenth century. It is extensively cultivated in this and other countries for its seeds, which are highly valued for feeding sheep, pigs, poultry, pigeons, rabbits, etc., and are considered superior to linseed for feeding cattle. An oil is obtained from the seeds, said to be equal to olive oil. They are also ground into a meal and made into cakes, or roasted and used as coffee. It is an excellent plant for bees, large quantities of honey and wax being obtained from the flowers. It is extensively grown in China; and in Russia the seeds are sold in the streets and eaten as nuts.

Sunn Hemp. (*See* Hemp.)

Supple Jacks (*Paullinia curassavica*), a scandent hard-wooded climber of the Soapberry family (Sapindacæ), native of the West Indies and tropical America. The stems are flexible, and converted into walking-sticks, and known in the West Indies, as well as in this country, under the above name.

Swamp Oak (*Casuarina suberosa*), a tree of the Casuarina family (Casuarinacæ), native of Australia; it is of singular and

handsome growth, pyramidal in form, growing in moist situations ; its wood is hard, and is used for structural purposes.

Sweet Basil (*Ocimum basilicum*), an annual plant of the Mint family (Labiatae), said to be a native of India, but it appears to have been early known in the South of Europe, and in this country for about 300 years. It has a strong aromatic scent, analogous to cloves, and is used for culinary purposes.

Sweet Flag (*Acorus Calamus*), a strong-growing sub-aquatic of the Aroid family (Aroideae), having a thick creeping rhizome, from which rise sword-shaped leaves, 2 to 3 feet in length ; the spathe containing the spadix is borne on a narrow, leafy, flat stalk. It is common in England and most temperate countries of the northern hemisphere. The whole plant has a strong, sweet, aromatic smell. The pounded root is used by perfumers for scenting hair-powder, and in Lincolnshire, where it abounds, it is used as a cure for ague. In Norwich it is or was a custom on festivals to strew the floor of the cathedral with the leaves of the Sweet Flag, which on being trodden upon raised a pleasant odour.

Sweet Plum. (See Sour Plum.)

Sweet Potato or **Batata** (*Batatas edulis*), a perennial plant of the Bindweed family (Convolvulaceae). This is supposed to be originally a native of India, but it has long been universally cultivated throughout all tropical and sub-tropical regions. It forms one of the principal articles of food of the natives of New Zealand and the islands of the Pacific. It is a twining plant, with heart-shaped leaves, having flowers like the convolvulus, and tuberous roots like potatoes. By change of letters and pronunciation the name potato was derived from the Spanish Batata. There are many varieties, varying considerably in size and shape, from that of an ordinary potato to several pounds in weight, some in Java attaining a large size. The Sweet Batata was known in this country in the time of Gerard (1597), who had it growing in his garden at Holborn, London ; he says, "In summer it flourished, but rotted in winter, this climate being too cold for its cultivation as a food plant." It, however,

is cultivated in the South of France and Spain ; it makes an excellent preserve, which is highly prized by the Spaniards. From the latter country tubers are exported to this country.

Sweet Sop (*Anona squamosa*), a tree of the Custard Apple family (Anonaceæ), native of the West Indies and tropical America, and cultivated in many parts for its fruit, which is netted, scaly, and hard, but softens after being gathered ; it possesses a fine luscious flavour, but is rather disagreeable to eat on account of its numerous seeds.

Sycamine Tree, a scriptural name for the Mulberry tree.

Sycomore Fig Tree (*Ficus Sycomorus*), a bushy tree of the Mulberry family (Moraceæ), from 30 to 40 feet high, with lobed heart-shaped leaves, something like the common fig, but smaller. It is a native of Syria and Egypt, and has been called Pharaoh's Fig. The fruit is small, but is produced in great abundance, and is extensively used in Egypt for food. Although its wood is light and soft, it is nevertheless very durable, mummy coffins having been found made of it. That the Sycomore was common in Palestine appears evident from the circumstance that King Solomon made cedars "to be as the sycomore trees that are in the vale, for abundance," also that it grew in the neighbourhood of Jerusalem in the time of Christ, as we read that Zacchæus "climbed up into a sycomore tree."

Syringa. (See Lilac.)

Tacamahaca. (See Poplar.)

Talipot Palm (*Corypha umbraculifera*), a noble fan-leaved palm, native of Ceylon, with a stout cylindrical stem, attaining a height of 50 to 100 feet. Its fruit is a hard nut, like ivory, and is converted into buttons, toys, etc. Its large fan-shaped leaves are, like those of the Palmyra Palm, carried over the heads of people of rank as an umbrella ; they are also used for making books, and for domestic purposes. *C. Taliera* is similar in habit, but does not attain such a great height, and is more common throughout India.

Tallicoonah, a name for Crab Oil (which see).

Tallow Tree (*Stillingia sebifera*), a tree of the Spurgewort family (Euphorbiaceæ), native of China, where it is, as well as in India and some warm parts of America, extensively cultivated. It is a small tree, with rhomboid tapering leaves and a three-celled capsular fruit, each cell containing a single seed thickly coated with a white greasy substance that yields tallow, of which candles are made; it has been used in this country in the manufacture of soap, and as a substitute for linseed oil, also for dressing cloth and for burning in lamps.

Tamanu. (*See Bitter Oil.*)

Tamarind (*Tamarindus indica*), a wing-leaved spreading-branched tree of the Bean family (Leguminosæ). In India it is said to attain a height of 80 feet, and a girth of 25 feet. It is also found wild in Arabia and Egypt, and has become indigenous in the West Indies. It has flat pods, about 4 or 6 inches in length, which contain a sweet pulp. These pods are pressed in syrup or sugar, and form the preserved Tamarinds of the shops.

Tamarind, Velvet (*Codarium acutifolium*), a small tree of the Bean family (Leguminosæ), having winged coriaceous leaves, native of Sierra Leone. The seed-pods are about the size and form of a filbert, and are covered with a beautiful black velvety down. They contain an agreeable acid farinaceous substance, which is used as food.

Tamarisk, Common (*Tamarix gallica*), a heath-leaved shrub of the Tamarisk family (Tamaricaceæ), common on the southern coasts of this country, and the coasts of the Atlantic and Mediterranean. It or an allied species (*T. mannifera*) is common in the Peninsula of Sinai. Its stems are punctured by a small insect of the Cynips family, from which a juice exudes, which hardens, and is collected by the Bedouin Arabs and made into cakes, and called Manna. It is sweet, and consists of a mucilaginous sugar, and forms a small article of commerce at the present day. It is by some supposed to be the manna of the Israelites, but it does not in all points agree with the descriptions of that substance. (*See Manna.*)

Tamarisk Salt Tree (*Tamarix orientalis*), native of North-West India. It is a most remarkable tree, and of rapid growth. Trees six or seven years old measure 5 feet in girth, and fall in twenty years from old age. It contains much salt, with which the tree becomes incrustated, and is used by the natives to season their food. The wood when burned has a very offensive odour. In the Punjab *T. articulata* attains a height of 60 feet. On the banks of the Jordan and hilly country of Bashan *T. Pallasii* forms graceful trees, which by some Bible commentators are supposed to be the oak under which Saul and Jonathan were buried.

Tanekaha, the native New Zealander's name for *Phyllocladus trichomanoides*, a tree of the Yew family (Taxaceæ). It attains a height of 40 to 50 feet, and a girth or circumference of 2 feet. The bark is plain and of a light colour; it comes off in rings of about 6 inches. The leaves in the young plants are very small and parsley-like, but in the mature plant they entirely disappear, the terminal branches becoming flat and leaf-like. Its wood is somewhat darker than that of the Kauri, it has a closer grain, smells strongly of turpentine, is less affected by wet than any other yew, and is an exceedingly valuable wood. It is used for all kinds of outside work.

Tanghin. (*See* Ordeal Tree.)

Tangle. (*See* Fucus.)

Tansy (*Tanacetum vulgare*), a strong-growing perennial of the Composite family (Compositæ), having finely-cut leaves, and heads of yellow button-like flowers, native of this country. The whole plant has a strong aromatic scent and a bitter taste, which led it to be considered as possessing highly medicinal properties; it is prescribed by herb doctors.

Tapa Cloth. (*See* Paper Mulberry.)

Tapioca. (*See* Cassava.)

Tar is the concrete resinous sap of Fir and Pine trees (which see). It is obtained by a rough system of distillation, which is effected as follows:—The boles, roots, branches, and waste timber are cut up into billets; a conical hole is dug in the

ground, generally in the side of a bank, in which the billets are placed, and formed into a heap above the surface, the whole being closely and compactly covered with turf or earth; a fire is then kindled from below, and the slow combustion causes the tar to exude from the wood, and flow from an opening into barrels placed below to receive it. The greatest quantities used in this country are imported from ports in the Baltic and Archangel. Tar by distillation yields the products, wood-vinegar (pyroligneous acid), oil of tar, and creosote, and leaves a resinous residue called Pitch; the principal quantity of pitch, however, is obtained by boiling tar; by evaporation the volatile oil passes off, and the residue hardens into pitch.

The above method of obtaining tar and pitch was described by Theophrastus 2200 years ago, and at the present time is much modified by the introduction of modern applications.

Tare, or Vetch (*Vicia sativa*), an annual of the Bean family (Leguminosæ), extensively cultivated in this country as early fodder for cattle. It must be understood that it is not the tares among the wheat spoken of in the New Testament, for which see Darnel.

Taro.—*Colocasia esculenta*, *C. antiquorum*, and *C. macrorrhiza*, herbs of the Arum family (Aroideæ). They have large, heart-shaped leaves, borne on long foot-stalks, which rise from a short, fleshy, farinaceous corm. Numerous varieties are cultivated throughout all tropical countries. The corms furnish an important article of food to the inhabitants of tropical India, the islands of the Pacific, and also in the West Indies, where they are called eddoes, and scratch-coco. Taro is the general name for them.

Tarragon (*Artemisia Dracunculus*), a strong, erect, perennial of the Composite family (Compositæ), native of Siberia, introduced more than 300 years ago, and cultivated in our gardens as a culinary herb for flavouring dishes.

Tartarian Lamb. (See Barometz.)

Tavola. (See Myrobalans.)

Tawhai, or **New Zealand Beech**, a name in New Zealand for *Fagus fusca*, a tree of the Oak family (Cupuliferæ), 60 to 90 feet high and 5 to 8 feet in diameter. The wood is very tough, hard, and durable, and is much used at Wellington.

Tea, the Chinese name for the dried leaves of two evergreen shrubs, named by Linnæus *Thea bohea* and *T. viridis*, of the Tea Tree family (Ternstroemiaceæ), both wild and extensively cultivated throughout the Chinese Empire and Japan. A third species, *T. assamica*, native of Assam, has been added. Modern botanists, however, consider these to be only varieties of one species, especially the first two, now known by the name of *T. chinensis*, or still more recently as that of *Camellia Thea*. The Assam form is, however, perhaps distinct; it assumes the character of a tree, and has longer leaves. A beverage made by an infusion of the leaves in water has been in use by the Chinese from time immemorial. It was first introduced into Europe by the Dutch in 1610. Pepys in his *Diary* records having drunk a "cup of tea" on 25th September 1660. Six years later its price was 60s. a pound, and was imported from Holland; it was first imported from China by the East India Company in 1669. In 1725 the price of black tea was 13s. to 20s. per pound, and of green 12s. to 30s. Its consumption continued yearly to increase, but it was not till the end of the last or the beginning of the present century that it came into general use as a beverage in this country. In 1800 the quantity imported into England amounted to 23,723,000 lbs., and in 1880 to 208,404,333 lbs. Tea was early subject to an import duty, the consequence of which was that during the first half of the present century the average retail price of common black tea was between 6s. and 8s. per pound. This high price led to the manufacture of spurious tea in this country, chiefly from the leaves of the sloe, willow, and other tea-leaved-like plants, which being mixed with re-dried and spent tea leaves, to which was added a little genuine tea to give scent, its sale gave employment to a considerable number of itinerant tea packmen. The duty having been reduced from 2s. 2d. per pound to 1s.,

and ultimately in 1865 to 6d. per pound, put an end to the manufacture of home-made tea. Before the political and trade arrangements with China, Canton was the only port open to trade with foreigners, and all teas were examined before shipment by a special officer appointed by the East India Company, called the Tea-taster; this had the effect of insuring genuine tea; but since the opening of other ports and the demand for tea continuing to increase, and the office of tea-taster being abolished, the opportunity of again adulterating tea has presented itself, and is carried on to a great extent at the present time. About thirty years ago tea began to be cultivated in Assam, and being successful has led to the formation of companies for cultivating it in various parts of India suitable to its growth, as also in Ceylon, where it has been eminently successful; no less than 45,371,704 lbs. were exported from India to this country in 1880. Tea having become a universal beverage in all civilised countries has led Japan to compete with China, and to furnish the United States with their principal supply. Russia and other nations of Northern Asia receive their tea from China made up into solid, hard lumps called Brick Tea, which is boiled and eaten like a vegetable. It was long supposed that black and green teas were the produce of distinct plants, the former from *Thea bohea*, and the latter *T. viridis*; but it is now known that both kinds are made indiscriminately from the same plant, the difference depending on the age of the leaf when gathered, and the mode of preparing. Originally pure green tea was considered the finest, and fetched the highest price; the demand led black tea to be artificially coloured, even almost to shiny blue, as was at one time to be seen in grocers' windows, the substances used being indigo, turmeric, prussian blue, and gypsum, specimens of which are to be seen in the Museum at Kew, and were obtained by Dr. Seeman on visiting a tea manufactory at Canton. The active principle of tea is called *Theine*; different opinions are entertained of its effects on the human frame when used as a daily beverage, but it may be considered beneficial, as the same principle, *theine*, is found in

coffee, Paraguay tea, and Guarana, the two latter being in as much repute in South America as the true tea is in China, and coffee in Europe and America. Next to these is an infusion of *Catha edulis* called Khat, which is extensively used in Arabia as a stimulating drink, but it contains no theine. An account of these will be found under the words Khat, Guarana, and Paraguay Tea. Besides the above special tea plants, many other plants have been used as substitutes for tea, but their use is very local, and in many cases prescribed by herb-doctors as a cure for different complaints; and as Chinese, Japanese, and Indian teas are now becoming abundant and cheap, all substitutes lose favour. The following are a few of the principal of the substitutes:—

1. American, North (*Ceanothus americanus*), a shrub of the Buckthorn family (Rhamnaceæ). The plant is known as the New Jersey Tea Shrub, and also as Redwood.

2. *Gaultheria procumbens*, a low, evergreen, bushy shrub of the Heath family (Ericaceæ), a native of Canada, and called Mountain Tea.

3. *Ledum palustre*, an erect, bushy shrub with small leaves, of the Heath family, native of Canada and Labrador, called Labrador Tea.

4. *Monarda didyma*, a perennial, with pretty scarlet flowers, of the Mint family (Labiatae), native of the Northern United States and Canada, called Oswego Tea.

5. *Prinos glaber*, an evergreen, smooth-leaved bushy shrub of the Holly family (Aquifoliaceæ), native of Canada, and called Winterberry Tea.

6. *Ilex vomitoria*, a shrub, or small evergreen tree of the same family, native of the Southern United States, called South Sea Tea. (See Black Drink.)

7. *Chenopodium ambrosioides*, a perennial of the Chenopodiaceæ, native of North America, but long naturalised in Southern Europe, called Mexican Tea; in Chili it is called Culen.

8. Australian (*Smilax glycyphylla*), an evergreen shrubby

climber of the Sarsaparilla family (Smilacæ), native of New South Wales, known as Botany Bay or Sweet Tea.

9. *Leptospermum scoparium*, a small hard-wooded tree of the Myrtle family (Myrtacæ), native of New Zealand, where it is called the New Zealand Tea Tree. In Australia several species of the Myrtle family, especially of the genera *Leptospermum* and *Melaleuca*, are known as tea shrubs.

10. Bourbon (*Angræcum fragrans*), a small, narrow-leaved, epiphytal orchid, native of Bourbon, highly fragrant, which fragrance is due to the principle called Coumarin.

11. Brazilian (*Stachytarpha jamaicensis*), a tall, single-stemmed biennial, with spikes of blue flowers, of the Verbena family (Verbenacæ), native of the West Indies and many parts of tropical America. In Brazil it is held in high repute for its medicinal virtues, and is said to be imported into Austria as Brazilian Tea.

12. Cape.—The leaves of *Cyclopia genistoides*, and other allied species, are said to be used at the Cape of Good Hope as tea. One kind is known by the name of Bush Tea.

13. Malayan (*Leptospermum* [*Glaphyria*] *nitida*), a shrub of the Myrtle family (Myrtacæ), native of the Malayan Islands, where it is called the Tree of Long Life, and in Sumatra it is used as a tea, called Bencoolen Tea.

14. West Indian (*Capraria biflora*), a shrub of the Figwort family (Scrophulariacæ), said to be a native of North America, but has become naturalised in the West Indies, and is called West Indian Tea; it is also known as Goat-weed.

In political history tea has claim to fame. In 1767 a tax having been imposed on tea imported into the British Colonies of North America, led to war and the ultimate separation from the mother country of the Colonies, now the United States.

Tea Tree. (See Box Thorn.)

Teak Tree, African (*Oldfieldia africana*), a large tree of the Spurge family (Euphorbiacæ), native of Sierra Leone, with digitate leaves and a dry, three-valved, capsular fruit. The wood was introduced in 1819 for shipbuilding purposes, but

was found too heavy for general use ; it is adapted, however, for steam-vessels, as it stands a great degree of heat.

Teak Tree, Indian (*Tectona grandis*), native of India, extending eastward to Burmah and islands of the Indian Ocean. It is a magnificent timber-tree of the Verbenaceæ family (Verbenaceæ) ; the wood is hard and very durable ; a specimen is exhibited in the Kew Museum said to be 2000 years old. It is largely imported into this country, and used for shipbuilding and railway carriages. Its young branches are quadrangular, with opposite ovate or elliptical leaves, about 6 or 8 inches in length, and very rough on the upper surface, which renders them useful for polishing ; they also yield a red dye, which is to be seen by the upper surface of the young leaves becoming of a red colour on being bruised. An oil called Teak-wood Oil is extracted and used for varnishing and polishing wood, etc. The Indian teak-forests are now under Government protection. An allied Indian tree of the same family is *Gmelina arborea* ; it also has hard wood, which is used in India for similar purposes to teak, but it is a much smaller tree.

Teak Tree, New Zealand (*Vitex littoralis*), a large tree of the Verbenaceæ family (Verbenaceæ), native of New Zealand, attaining a height of 50 or 60 feet, and of large diameter ; it has digitate leaves, and very hard and heavy wood that is used for purposes under water. It is known by the native name Puriri.

Teazle (*Dipsacus Fullonum*), a biennial plant of the Teazle family (Dipsacæ) ; its flower-stems attain a height of 4 to 6 feet, having large, opposite, lanceolate, stiff leaves, with their broad bases united, forming a reservoir which holds water. The flowers are small, growing in compact, cylindrical heads, about 4 inches in length and 1 inch in diameter. The flowers (florets) are separated by scales, which when the head is ripe become very hard, each furnished with a horn-like point, turned downwards at a right angle to the apex of the scale. The circumstance of the outward direction of the horn or bristle, as it may be called, makes the teazle-head of great importance to the fuller,

as no mechanical contrivance has been discovered to supersede it in bringing up the nap in the dressing of broadcloth; for which purpose it is cultivated in Yorkshire and many parts of Europe, besides which large quantities are imported from France, Germany, and other parts of the Continent.

Teele. (*See* Bulrush.)

Telegraph Plant (*Desmodium gyrans*), a slender erect shrub of the Bean family (Leguminosæ), native of India; it attains a height of 2 to 3 feet, having trifoliate leaves, the centre one being of an elliptical form, about 2 inches in length, the two side ones being small, about half an inch in length, which are in almost constant motion, rising and falling alternately, but not in regular time, sometimes resting. They are generally very active early in the morning, and in large plants many may be seen in motion at the same time; their rise and fall are compared to the railway telegraph signals. It is also known as the Moving Plant, and is cultivated in hothouses as a curiosity.

Teosinte, a French name for *Euchlœna luxurians*, a strong-growing perennial fodder grass. It is a native of Guatemala, and was first introduced into France in 1872, and extended to the Colonies. The plants grow to the height of 10 feet, a single plant sending up 100 or more stems. It is highly valued for the excellent quality and enormous yield of its foliage; its leaves are 3 to 4 feet long and 2 or 3 inches wide. It somewhat resembles maize, but is much stronger; the head of corn is contained in a sheath. It is too tender for the open air in this country. At Kew, where it flowered in the Water Lily house, it attained the height of 15 feet.

Terebinth, a Hebrew name of a tree in our Bible translated Turpentine Tree, and by Linnæus called *Pistacia Terebinthus*. It belongs to the family Anacardiaceæ. It has winged leaves similar to those of the ash, but smaller and of a reddish tinge; the flowers are small and inconspicuous. It is common in the Greek islands and in Palestine, generally growing solitary, forming small trees. It also extends into Egypt and westward through North Africa; it is abundant in

Algeria, the latter supposed by some to be a distinct species known as *T. atlantica*. By making incisions in the stem and branches a liquid flows, which is the Chian turpentine of commerce. It has a pleasant aromatic smell ; and comes chiefly from the Island of Chio, and only in small quantities. This substance has been brought very prominently into notice during the past two years as a remedy for the cure of cancer.

Terra Japonica. (*See Gambir.*)

Thatch Palms, a name given in Jamaica to several species of low-growing fan palms, such as *Thrinax parviflora*, *T. argentea*, and in North America to *Sabal Palmetto* and *S. Adansonii*, and *Euterpe montana* in Brazil. A wing-leaved species is called Mountain Thatch. As the name implies, they are employed by the negroes for thatching their huts, and for making hats and baskets. The unexpanded leaves of the Palmetto or Silver Thatch (*T. argentea*) were largely imported some years ago for making Chip Palm Hats.

Thistle, the common name for different species of *Carduus* and *Cnicus*, consisting of biennial and perennial prickly plants of the Composite family (Compositæ). About fourteen or fifteen are natives of this country, *C. arvensis* and *C. lanceolatus* being pests in cornfields. *C. marianus* is known as the Blessed Milk or Mary's Thistle, tradition ascribing the white lines or marks on its leaves to a drop of the Virgin Mary's milk falling on it, and becoming permanent in its progeny. It is common in Palestine, and has become indigenous in most of the temperate regions both in the northern and southern hemisphere, being a pest to the cultivator ; but in some parts it is used as fodder in dry seasons. A great portion of the once grassy pampas of South America has become overrun with thistles. A flowering head of thistle is the badge of Scotland, but early history assigns no cause, nor does there seem to be any authority for adopting any particular species, all legends, and what has been written about it in modern times, being merely fables. Thistles are wholesome, and when bruised to destroy the prickles are given to cattle.

Thitsee, or Theetsee. (*See Varnish.*)

Thorn, a general term for spiny plants, chiefly applied to the different species of *Cratægus*, as the Hedge Thorn (*C. Oxyacantha*), and the Cockspur Thorn (*C. Crus galli*).

Thorn Apple. (*See* *Datura*.)

Thrift, a common name for *Statice Armeria* or *Armeria vulgaris*, and minor tufty grass-leaved herbs of the Leadwort family (Plumbaginaceæ), common on banks and rocky places on sea-coasts of this country. They are known in gardens as Greater and Lesser Thrift, also by the names of Sea Gilliflowers and Sea Thrift. They are suitable for forming edges for walks and borders, for which they are in some gardens used instead of box.

Thus, or **Frankincense**, a resin from *Abies excelsa*.

Thyme (*Thymus vulgaris*), a small-leaved, compact, evergreen shrub, not exceeding 1 to 2 feet in height, of the Mint family (Labiatae), native of Southern Europe, introduced into this country more than 300 years ago, and a favourite for its aromatic scent ; also used as a flavouring agent for culinary purposes. In France an oil is extracted from it, known as Oil of Thyme, but for which marjoram oil is often substituted.

Thyme, Cat (*Teucrium Marum* and *T. Polium*), small, neat shrubs, also of the family Labiatae, not exceeding a foot in height, with small leaves, natives of the islands and coasts of the Mediterranean. The first is used medicinally, and excites sneezing. Cats are fond of rolling on it.

Thymol. (*See* *Ajowan*.)

Ti, a name in New Zealand for *Dracæna terminalis*, a tree of the Lily family (Liliaceæ), common in the Sandwich Islands and in the islands of the Pacific generally. It has thick fleshy roots which contain saccharine matter, from which the natives extract sugar. They also bake and eat the roots, and a spirituous liquor is obtained from them by distillation.

Tibisiri, the Indian name for the Miriti Palm (which see).

Tick Seed, a name in the United States for *Desmodium acuminatum* and *D. nudiflorum*, perennial trifoliolate-leaved herbs of the Bean family (Leguminosæ), common in the Southern United States. Used as fodder plants, and to increase the secre-

tion of milk in cattle. It takes the name Tick Plant from the flat-jointed hispid seed-pods becoming attached to animals and to clothing. Tick Seed is also the name of *Corispermum hyssopifolium*, an annual of the Chenopod family.

Tiger Grass (*Chamærops Ritchieana*), a dwarf fan palm, native of the region between India and Afghanistan, where it is called Maryarri. It is put to all manner of uses by the natives; fans and mats are made of the leaves, and a strong fibre is obtained from the leaves and stalk by maceration in water. Ropes are made of the inferior fibre, and for sandals the finer kind of fibre is used; the downy hair of the spathe is used as tinder. The young unexpanded leaves are sweet and astringent, and are considered beneficial in diarrhœa.

Tiger Wood, a name in British Guiana for the wood of *Machærium Schomburgkii*, a large tree of the Bean family, producing the beautifully mottled wood called Itaka, Itiki, or Tiger Wood, used for furniture in that country.

Til. (*See* Laurel, also Sesamum.)

Timbee, a Brazilian name for a poisonous honey made by a wasp from the flowers of *Serjania letalis*, a strong-growing, wing-leaved climber of the Soapberry family (Sapindaceæ). Experiments have been made with it, and its effect is to produce a sort of drunkenness and delirium, sometimes occasioning death. It is also a fish poison, to which may be added an allied plant, *Paullinia pinnata*.

Timothy Grass (*Phleum pratense*), a perennial meadow and hay grass, cultivated in this country.

Tinder, German, a preparation made from *Polyporus fomentarius*, a large-growing leathery fungus, a foot or more in diameter, growing on trees in this country, but more abundantly in Germany, where it is collected in large quantities, and forms a considerable article of trade. It is cut in slices and beaten out, forming large sheets like thick felt, which is used for warm underclothing, and when mixed with saltpetre forms the substance called Amadou, or German tinder.

Toadstools, a vulgar name for fleshy fungi represented by

the genus *Agaricus* and its allies, of which the common Mushroom may be considered the type (which see).

Tobacco (*Nicotiana Tabacum*), an annual herb of the Nightshade family (*Solanaceæ*). The original country of this and several other species producing Tobacco is America, where its use was first discovered by Columbus in 1492, by whom on his return it was introduced into Spain, and by Sir Walter Raleigh into England in 1589. Although great objections to its use were raised by kings and popes, it nevertheless spread over Europe and all countries of the East. Tobacco now constitutes a most important article of commerce, being imported into England from various countries under different names and qualities. The great bulk comes from the United States, where it forms one of the chief articles of cultivation (till recently by slaves). The word Tobacco is said to be derived from the original name of the pipe used by the Carib Indians for smoking it. It is a handsome growing plant, attaining a height of from 4 to 6 feet, having broad oblong or sharp leaves, and pretty pink, tubular, or bell-shaped flowers. It grows freely in this country, but on account of excise restrictions is not cultivated to any extent. The different methods of manufacturing and using Tobacco are too well known to be noticed here. Various kinds of snuff are made from the leaves first being dried and then ground into powder. No plant is of more extensive use, and it is calculated that one man out of every four uses it. In 1878, 960 tons of cigars were imported into this country, nearly half of which are imported from Cuba and other West Indian Islands; the other half from the United States and other countries. The high duty on foreign tobacco has led to various plants being substituted for it, as the leaves of cabbage, rhubarb, dock, and suchlike plants, which are soaked with tobacco liquor, and so have imparted to them the flavour of true tobacco; they are then dried and made into cigars.

Tobacco, Mountain, a name given to *Arnica montana*, a low-growing perennial herb of the Composite family (*Compositæ*), native of the Alps and other parts of Central Europe. Its roots

and leaves are powerfully acrid. It is nevertheless employed as a stimulant in low fevers, and other conditions of debility ; also in paralytic affections. Externally it is much used as a tincture applied to bruises, wounds, and sprains. Its peculiar properties are due to a resinous substance called *Arnicine*, and to a volatile oil.

Tocussa. (*See* Natchnee.)

Toddy. (*See* Palm Wine.)

Toi Grass, the native New Zealander's name for *Arundo conspicua*, a tufted caespitose grass, producing a culm from 3 to 4 feet high, bearing a feathery plume similar to that of the pampas grass ; but it is not so hardy, as in this country it requires the protection of a greenhouse.

Toko-Pat (*Livistona Jenkinsiana*), a fan-leaved palm of moderate height, native of Nepal. The leaves are used for making the peculiar umbrella hats worn by the natives, also for thatching, etc.

Tomato, or **Love Apple** (*Lycopersicum esculentum*), an annual of the Nightshade family (Solanaceæ), a weak, trailing plant, with a soft stem, winged leaves, and yellow flowers. It is a native of South America, and is cultivated in most warm countries for the sake of its fruit. It succeeds best in this country when trained against walls. There are several varieties, bearing large red or sometimes yellow fruit, which are used for culinary purposes, the well-known sauce call Tomato Sauce being made from them. Tomatoes are extensively grown in Arlington and Belmont, United States, and preserved in tins for trade.

Tonga.—Under this name there have been of late received in this country from the Fiji Islands small packets of leaves, bark, and woody fibres, so broken up as to be most difficult of botanical determination. Some of the fragments, however, show traces of the roots or stems of an Aroideous plant, and they have since been determined as belonging to the genus *Epipremnum*, and possibly to *E. vitiensis*, the remaining bark and leaf fragments being yielded, it is said, by *Premna taitensis*, a verbenaceous plant which probably has no active principles whatever. The drug seems to have an extraordinary effect in cases of neuralgia.

Tonquin Bean (*Dipteryx odorata*), a hard-wooded tree of the Bean family (Leguminosæ), attaining a height of 60 to 80 feet, native of Guiana and Cayenne, having simple winged leaves, and fruit-pods of an oval form, like an almond, each containing one seed about an inch in length, which is fragrant, and is used for scenting snuff and in perfumery—the fragrance being due to the presence of the principle known as Coumarin.

Tontel (*Tontelea pyriformis*, or by some called *Salacia pyriformis*), a shrub of the family Hippocrateæ, native of Sierra Leone. Its fruit is about the size and shape of a bergamot pear; its flavour is very rich and sweet. In Brazil *Salacia dulcis* produces a fruit the size of a crab apple; it is yellowish in colour, sweet and juicy, and according to Dr. Spruce is much eaten by the Indians on the Rio Negro, where it is called Waiateima.

Toona. (See Cedar, Indian.)

Toothache Tree.—As might be expected, various plants have obtained a reputation for the cure of toothache. The common Toothache Tree is *Zanthoxylum fraxineum*, a native of North America, a small tree of the family Zanthoxylaceæ, introduced into this country, and like most North American trees, is hardy.

Torch Thistles, a name early given to the erect columnar species of the genus *Cactus*, and forming part of the section *Cereus* of the family Cactaceæ. Their stems are plain, cylindrical, or ribbed and fluted, or of 4 to 5 or 6 sided, of which *C. tetragonus*, *C. pentagonus*, and *C. hexagonus* are examples. They attain a height of 20 to 30 feet, and with age lose their succulent character, becoming hard and woody, and are used for house-building and other purposes. These and other allied species are found in more or less abundance from Chili in the south to Mexico in the north. The fruit of many of them is like the Indian fig, sweet and luscious. In *C. Pitaya*, native of Western Mexico, the fruit is red, and when eaten in quantity they colour the secretions of the body. *C. senilis* and *C. giganteus* are worthy of special notice; the first is a native of Mexico, in the district of Real-del-Monte, where it grows in a hot valley called Terra

Calientes. It has a cylindrical stem, consisting of many ridges, and grows to a height of 20 to 30 feet, with a diameter of 9 to 10 inches. In 1846 about 100 plants were received at Kew, varying in size from 1 to 3 feet ; while three specimens were from 8 to 12 feet high. In the greater number of them the roots were on one side at a right angle with the stem, clearly showing that they were grown in crevices of rocks. The whole is of a grey colour, the top part being furnished with long white hairs and spines, which hoary aspect has led to its being called the Old Man Cactus. The stem of this plant contains a large quantity of oxalate of lime in small sand-like grains, which renders the plant very heavy and brittle. *C. giganteus* is a still more remarkable plant. It is a native of the hot, arid, and almost desert regions of New Mexico, extending from 30° north to William's River 35° north, growing in rocky valleys and on mountain sides, often springing out from crevices in the hard rocks, and imparting a singular aspect to the scenery of the country. The stems are cylindrical, and according to age 50 to 60 feet in height, with a diameter of about 2 feet at middle height ; they are generally simple, but some are branched ; the branches turning upwards, in the distance give to the plant the appearance of a chandelier, or, as some say, a toasting-fork. The fruit is oblong, 2 to 3 inches in length, green, full of black seeds embedded in a crimson pulp, which the Indians use as an article of food. They gather the fruit by means of a forked stick tied to a long pole. The Indians call it Saguara.

Tortoise Plant, also called Elephant's Foot (*Testudinaria elephantipes*), a remarkable plant of the Yam family (Dioscoreaceæ), native of South Africa. It consists of a large woody, above-ground, corm-like stem, generally of a conical form, having a diameter of from 3 to 4 feet, and as much in height, of a fleshy fibrous substance, covered with a hard tessellated coat composed of numerous angular protuberances, and producing from its apex slender twining herbaceous stems. The leaves are small and cordate ; the flowers small and yellow. It was originally used by the Hottentots as food, and was called Hot-

tentot Bread. The popular name Elephant's Foot is given to it from the resemblance which small plants bear to the rough foot of that animal. Large plants of it are frequently imported into this country.

Totara, a name in New Zealand for *Podocarpus Totara*, a tree of the Yew tree family (Taxaceæ). It attains a height of from 60 to 120 feet. The wood is somewhat like cedar, fine-grained and very durable, and is used for carpenter's work of all kinds ; the largest canoes of the natives are made of it.

Touch-me-not (*Impatiens Noli-me-tangere*), an annual of the Balsam family (Balsaminaceæ), native of this country, attaining a height of 2 to 3 feet. Its seed-vessel, which is 2 inches in length, bursts open with force, expelling the seed with a slight noise.

Tous-les-mois. (See Arrowroot.)

Tow, a name in Tahiti for *Cordia subcordata*, a tree of the Sebesten family (Cordiaceæ), attaining a height of 50 to 60 feet. It is similar in appearance to *C. Sebestena* of the East and West Indies ; but its orange-coloured flowers are neither so brilliant nor so numerous. The wood is of a dark-red colour, and is used for frames of huts ; its leaves yield a red dye, used by the natives for colouring their tapa cloth ; its bark is tough, and used for making nets.

Towai, a name in New Zealand for *Fagus Menziesii*, a tree of the Oak family (Cupuliferæ), 80 to 100 feet high, and 2 to 3 feet in diameter. The wood is durable, and adapted for masts, oars, etc., and for cabinet-work.

Tragacanth. (See Gum.)

Traveller's Joy. (See Virgin's Bower.)

Traveller's Tree (*Urania speciosa*), a palm-like tree of the Musa family. This noble plant, a native of Madagascar, is also known as *Ravenala madagascariensis*. It has a cylindrical stem, about 1 foot in diameter and 30 or more feet in height. It has large leaves like the *Musa Ensete*, but set in two rows (distichous), and they have their foot-stalks dilated at the base firmly imbricate over one another. The flower-spike is short

and produced from the centre as in *Musa*. The fruit consists of a dry three-valved capsule, and the seeds are the size of large peas, and are surrounded by a woolly coat of a beautiful blue colour (*arillus*). The stems harden, and are used in Madagascar for house-building, making durable floors for warehouses, etc.; for this purpose they are split in halves, and the convex side is placed uppermost; this soon flattens down and becomes extremely hard.

The broad leaves of this plant are well adapted for collecting rain-water, which trickles down the leaf-stalk, and collects in considerable quantities within its sheathing base. If the bases of the leaf-stalks are pierced with a knife the water gushes out like a jet, and on this account it has received the appellation of Traveller's Tree.

Trebizond Date. (*See* Oleaster.)

Tree Hair.—*Usnea barbata* and *Cornicularia jubata*, filamentous lichens growing in tufts on trees, and hanging down from the branches, like bunches of thread or grey hair. They are common in this country, especially in damp woods, often quite covering the trees, while in Lapland they are so abundant as to give the fir forests quite a thick gloomy appearance.

Trefoil, a name for Clover (which see).

Tripe-de-Roche, or **Rock Tripe**, a name given by Arctic navigators to *Umbilicaria* and *Gyrophora*, genera of the Lichen family, growing on rocks; they are of a circular form, and attached by the centre. In consequence of their mucilaginous character, of the nature of Iceland moss, they have been of great utility as food to Polar navigators.

Truffle (*Tuber cibarium*), a fleshy fungus of the Mushroom alliance. It is common throughout temperate Europe, and in this country it is chiefly found in Kent, Wiltshire, and Hampshire. It is of a spherical shape, seldom exceeding the size of a walnut, and when old is of a black colour veined with white; it grows just below the surface of the ground in calcareous soils, generally under trees; it emits a fleshy smell, which leads to its place of growth being found by dogs scenting it; it is now more

generally discovered by observing a species of fly hovering over the spot, to which they are attracted by the flesh-like scent of the fungus. Truffles are used in cookery, forming a much-esteemed expensive dish. In France they are cultivated.

Trumpet Flower, a general name for the species of *Bignonia*, the type of the Trumpet Flower family (Bignoniaceæ), which consists of numerous species widely distributed in both tropical and temperate regions. Those possessing special properties are noticed under their respective local names.

Trumpet Lily, *Richardia æthiopica*, better known as *Calla æthiopica*, a perennial of the Arum family (Aroideæ), native of Eastern Africa, and found growing in wet places from Egypt to the Cape of Good Hope. It is recorded as having been introduced into this country 130 years ago. It grows freely in the greenhouse, and its pretty white flowers (spathes) have made it a favourite ornamental plant for rooms, etc.

Trumpet, Sea (*Ecklonia buccinalis*), a strong-growing seaweed of the Laminaria section of Algæ. It is a native of many parts of the South Seas, and common at the Cape of Good Hope. The stem varies in length according to the depth of water, 10 to 20 or more feet, narrow below, gradually widening upwards, terminated by a crown of broad, floating, fan-shaped leaves, 10 to 12 feet long; its stem is hollow, and forms an excellent syphon; it is also cut into lengths, and formed into a kind of trumpet. Deprived of its alkaline properties by a chemical process, it becomes tough and plastic like morocco leather, and has then been used for binding books. By other processes it becomes hardened, so that it can be applied for walking-sticks, whips, and knife handles, also as a substitute for stag-horn.

Laminaria digitata is used for the same purposes.

Trumpet Tree, a name in the West Indies and tropical America for *Cecropia peltata*, a tree of the Bread-fruit family (Artocarpaceæ), a rapid-growing tree, attaining a height of 40 feet, terminated by branches which stand out at nearly right angles with the stem. Its leaves are large, about a foot

in diameter, attached near the centre to a long foot-stalk, the margin being deeply lobed, the under side white ; after falling their regular position on the stem is marked by permanent scars. The wood is soft, and the young branches are hollow, so that musical instruments are made from them. This tree is a great resort of ants.

Tuberose (*Polianthes tuberosa*), one of the Lily family (Liliaceæ). This is said to be a native of the East Indies, but has been long introduced into the South of Europe, and is at present extensively cultivated in Italy for its bulbs, which form an article of trade, and are exported to this and other countries. It derives its generic name from *polis*, a city, and *anthos*, a flower, literally flower of the city. It must not be confounded with *Polyanthus* of the Primrose family, or with *Narcissus polyanthus*.

Tucuma, the Indian name of *Astrocaryum Tucuma*, a wing-leaved palm, attaining a considerable height, native of the upper regions of the Amazon. The fruit consists of a hard nut covered with a thin coating of pulp, eaten by the natives.

Tulip (*Tulipa Gesneriana*), a bulbous plant of the Lily family (Liliaceæ). The Tulip is said to be a native of the Levant, the specific name being given in honour of a botanist named Gesner, who was the first to describe and figure it, in 1559. It appears to have been cultivated in this country about 1577. The original, or wild plants, have yellow flowers, but cultivation has produced hundreds of beautiful varieties, varying greatly both in colour and size. Formerly some of these varieties were so famous that high prices were paid for the bulbs, which in Holland became a speculative mania. In 1639, 120 tulips sold for 90,000 florins, and 1 sold for 4203 guilders, bulbs representing scrip to a large amount, and even scrip circulated on ideal bulbs. This ruinous traffic was ultimately stopped by the State. For many years tulips have been favourite objects of cultivation and competition amongst florists in this country.

Tulip Tree (*Liriodendron tulipifera*), a tree of the Magnolia family (Magnoliaceæ), native of North America. A noble tree, attaining, even in this country, a height of 70 to 80 feet; this, however, is exceeded by one at Longleat, in Wiltshire, which is stated to be 100 feet high, and 10 feet in circumference at 5 feet from the ground. Its leaves are three-lobed; it has numerous erect flowers of a pale-yellow colour, similar in form to a tulip. The wood is hard and durable, takes a good polish, and is used for many purposes.

Tulip-wood of Brazil (*Physocalymma floribunda*), a small deciduous tree of the Henna family (Lythraceæ), native of Brazil; it has opposite, oval, rough leaves, and large terminal opposite-branched panicles of purplish flowers. Its wood is beautifully striped and rose-coloured, and is highly esteemed by cabinetmakers for inlaying costly furniture.

Tulip-wood, Queensland (*Harpullia pendula*), a lofty tree of the Soapberry family (Sapindaceæ), native of Queensland, its stem varying from 18 to 20 inches in diameter. Its wood is light coloured, interspersed with darker mahogany-coloured patches capable of taking a high polish.

Tumboa, the native name of Welwitschia (which see).

Tupelo Tree (*Nyssa villosa*), a tree of the Cornel family (Cornaceæ), native of North America; it has simple, entire, small leaves, and attains a height of 40 to 70 feet. In autumn it is very conspicuous by its leaves turning red. It has a hard wood, and is difficult to split on account of its fibre being twisted. It is used for naves of carriage-wheels. *N. capitata*, *N. biflora*, and *N. denticulata*, natives of North America, are also known as Tupelo trees.

Turk's-cap Cactus. (See Melon Thistle.)

Turmeric (*Curcuma longa*), a perennial herb of the Ginger family (Zingiberaceæ), with elliptical leaves rising from a fascicle of tuber-like roots, which differ in form, some being round, others long and narrow. It is in general cultivation throughout the whole of the Eastern tropics, the Polynesian, and most of the Pacific Islands. The tubers yield the yellow

dye Turmeric, which is used in cookery for colouring curries, confections, etc. It is greatly used by the natives of the Pacific Islands for painting their bodies, which they often do, in various colours, imitating the dress of Europeans. Other species of *Curcuma* yield a kind of Turmeric similar to the above.

Turnip (*Brassica Rapa*, considered by some botanists a sub-species of *B. campestris*), a biennial of the Cabbage family (Cruciferae), native of this country and other parts of Europe; there are several varieties, such as the White and Yellow Garden, and the White Field Turnip. The Swede Turnip, cultivated for feeding cattle, is referred to *B. campestris* proper. The Turnip, during its growth in summer, is subject to be attacked by the mildew fungus, *Peronospora parasitica*, or sometimes *Oidium balsamii*, allied to the vine, peach, and potato mildews. Whole fields of Turnips become white in a night, with one or other of these, especially the first, which, with the Turnip Fly, cause great havoc to the crops.

Turnsole (*Croton* [*Chrozophora*] *tinctoria*), an annual of the Spurge family (Euphorbiaceae), 6 to 12 inches in height, native of the South of Europe. In France and other parts it is cultivated for the sake of a dye called Turnsole, which is obtained by bruising the whole plant.

Turpentine Trees and **Turpentine**, a resinous generally fragrant liquid exudation that issues either naturally or by incisions made in stems or branches of certain trees, the greater number belonging to the Coniferae family.

Turpentine, American.—The greatest quantity and best quality is the produce of *Pinus australis*, generally called *P. palustris*, a tree widely diffused over the Southern United States, occupying extensive tracts, and making its appearance in all waste places, and quickly occupying worn-out cotton-fields. In Russia and Finland turpentine is yielded by *P. sylvestris*, the Scotch Fir; in Corsica and Austria by *P. Laricio*; and in South-Western France by *P. Pinaster*. The resinous sap is obtained in the usual way; by a process of refining, it becomes Common Turpentine. It, however, is much

inferior to the American; the residual or thickened part is distilled, and the oil separates and forms the well-known Oil of Turpentine; the matter that remains at the bottom of the still is the common yellow rosin.

Turpentine, Australian.—An aromatic oil so called is obtained from *Tristania conferta* and *Syncarpia laurifolia* (*T. albens*), spreading-branched laurel-leaved trees of the Myrtle family (Myrtaceæ), natives of New South Wales and Queensland.

Turpentine, Canada.—The resinous substance well known as Canada Balsam is the produce of *Abies balsamifera*, a tall tree, native of North America, extending from Canada to California. The balsamic fluid collects in bladder-like blisters formed in the bark, and is collected in the same manner as the preceding. It is used chiefly for mounting microscopic objects, also for varnishing.

Turpentine, Chian or Scio. (*See Terebinth.*)

Turpentine, Strasburg, obtained from *Abies* (*Picea*) *pectinata*, the Silver Fir. A tall tree common in the Alps and Central and Eastern Europe. The turpentine of this tree is found in bladder-like blisters in the bark, they are most abundant on the higher parts of the tree, and are reached by expert climbers, who carry with them vessels for holding the liquid, which freely flows when the bladders are punctured; it is purified by straining. It is called Strasburg Turpentine from a large forest of silver firs growing near the city. (*See also Fir Trees.*)

Turpentine, Venetian or Venice, is the resinous sap that flows from *Larix europæa*, the Common Larch (which see).

Turpentine Plant. (*See Compass Plant.*)

Tussock Grass (*Dactylis cæspitosa*), a strong-tufted perennial grass, native of the Falkland Islands, where it lines the shores for one or two miles inland; it is a sweet grass, and cattle are very fond of it, and devour the tufts even to the root, and on that account care has to be taken to prevent its entire extinction. In 1842 a living plant was brought to Kew by Dr. J. D. Hooker, and afterwards seeds were obtained, which were

freely distributed, and hopes were entertained that it would become freely established in this country; but it was found that the climate was too hot and dry for it. It has, however, succeeded in the West of Scotland, especially on the coast of the Island of Lewis, where it has become established.

Tutu. (See *Coriaria*.)

Ugni, a name given in Chili to a species of *Eugenia*, called *E. Ugni*. It is a small, neat-leaved, bushy shrub, belonging to the Myrtle family (*Myrtaceæ*); it is nearly hardy, and if kept in a greenhouse it bears abundance of black berry-like fruits about the size of cherries, said to be highly esteemed in Chili; but our experience of it here is such as not to render it worthy of cultivation other than as a curiosity.

Umbra Tree (*Phytolacca dioica*), a tree of the Bloodberry family (*Phytolaccaceæ*), native of South America, now naturalised in many warm countries, even in the South of Europe, where it becomes a large tree of from 20 to 30 feet high. It has a thick, gouty, soft-wooded stem, often with large buttresses; the branches are furnished with large, dark, broad, elliptical leaves, the whole aspect of the tree being sombre and dull. In the hothouses of this country it soon attains a great height and thickness. The juice of its berries is said to be used for colouring wine.

Umbrella Tree. (See *Magnolia*.)

Upas Tree (*Antiaris toxicaria*), a tall tree of the Bread-fruit family (*Artocarpaceæ*). It has long narrow leaves, and grows in valleys in Java, rendered unwholesome by an escape of carbonic acid gas from crevices in the ground, which is fatal to animal life coming within its influence. The juice of the tree is highly poisonous. "Criminals condemned to die have the chance of life if they will go up the Upas tree and collect the poison, but not more than two out of every twenty returned." This account of the tree was first published by a Dutch surgeon, and became popular about the end of the last century. It is now known to be very much exaggerated. The tree, however, is not harmless, evil effects being felt by

handling the leaves or branches, and the juice, mixed with other ingredients, forms a deadly arrow poison.

Urari, an Indian name for a poison made from the bark of *Strychnos toxifera*, a straggling-branched small tree of the Nux Vomica family (Loganiaceæ), native of British Guiana and the upper regions of the Orinoco and Amazon. It has sessile, ovate, elliptical leaves, with well-marked longitudinal veins. The famous poison of the natives (*see* Blowpipe), called Ourari, Wourali, and Curarie, is obtained from the bark, which is stripped off and macerated in water. After lying some time the water is evaporated, when a black sediment resembling tar is left. This substance is harmless when eaten, but is fatal when it comes in contact with the blood through wounds. The flesh of animals poisoned by it is, nevertheless, perfectly wholesome. The mode of preparation of Urari poison is kept as a secret by the Indians. Dr. Schomburgk found that it consists of eight ingredients, five of which are known to botanists; three of these are said to be species of *Strychnos*, and it is expected that the others belong to the same genus. Other plants are mentioned by different writers as being connected with the preparation of this poison. This may be so, or may be simply a statement to throw more mystery over the manufacture.

Vacoua. (*See* Screw Pine.)

Valerian.—*Valeriana officinalis* and *V. dioica*, perennial herbs of the Valerian family (Valerianaceæ), natives of Britain, in moist places. They are extensively collected for their medicinal properties, which are of an antispasmodic character; the plants possess a strong, disagreeable smell, but cats and rats are very fond of them. Its leaves are very efficacious in the cure of wounds, hence it is sometimes called All-heal. An allied species, *V. capensis*, is a native of the Cape of Good Hope, and possesses similar properties, but is not so powerful.

Valonia. (*See* Oak.)

Vanilla (*Vanilla planifolia*), an epiphytal plant of the Orchid family (Orchidaceæ), growing somewhat like ivy, with thick laurel-like leaves, native of the West Indies and tropi-

cal America. It has insignificant greenish flowers, and produces a pod-like fruit, 5 to 10 inches long, and 1 inch in circumference, which is well known for its grateful aromatic qualities, and is used in confectionery, perfumery, and medicine. In commerce it is, in proportion to bulk, the highest-priced vegetable production imported. The greatest importation to this country is from the eastern parts of Mexico. It is now cultivated in Guiana and other parts of tropical America, as also in Ceylon, India, and other parts of the East. Vanilline, the active principle of Vanilla, is now closely imitated, and manufactured from pine-wood and clove oil.

Varnish, Black (*Melanorrhœa usitatissima*), a large tree of the Cashew Nut family (Anacardiaceæ), native of the forests of Pegu, Tenasserim, and Sylhet, said to attain a height of 80 to 100 feet, having a large spreading head, and broad, simple, thick, firm leaves. Its wood is black, hard, and heavy, so much so that boat anchors are made of it. It is known by the name of Pegu Lignum Vitæ and Thitsee. Its most important product is the sap which flows from the trunk on being wounded, of which large quantities are collected. It is first white, and becomes black on exposure to the air. It is largely used as a varnish for all kinds of household furniture and ornamental work. It possesses the acrid property of most plants of the family, in causing swellings on the skin if incautiously handled.

Varnish, Japan, the sap of *Rhus vernicifera*, a slender-branched tree with winged leaves, attaining a height of 20 feet, belonging to the Cashew Nut family (Anacardiaceæ). It is common throughout Japan, and is cultivated for its sap, which flows from its stem and branches on being wounded. It is first cream-coloured, but on exposure to the air soon turns black, and is the varnish which the Japanese use for lacquering or varnishing their furniture or ornamental articles; the antique ware is now scarce and highly prized by connoisseurs.

Varnish, New Grenada (*Elaeagia utilis*), a lofty tree of the Cinchona family (Cinchonaceæ), native of the Andes of New Grenada. It is remarkable for secreting a quantity of green,

waxy, or varnish-like substance between the stipules. It is collected by the Indians, and employed to varnish boxes and other useful and ornamental articles. After undergoing a process of purifying, various colouring matters are applied to it, which impart a variety of colours to the articles varnished with it. Several other plants yield varnish, which will be found noticed under their respective names.

Vegetable Ivory. (*See Ivory-nut Palm.*)

Vegetable Marrow (*Cucurbita ovifera*), an annual trailing plant of the Gourd family (Cucurbitaceæ). It is supposed to be a variety of the common Gourd (*Cucurbita maxima*), and is extensively cultivated in the summer months in this country as a culinary vegetable. The average size of the fruit is 6 or 9 inches in length, but specimens have been known to reach 2 feet.

Vegetable Sulphur. (*See Club Moss.*)

Venus Fly-Trap (*Dionæa muscipula*), a remarkable perennial plant of the Sundew family (Droseraceæ), with leaves rising from a centre in the form of a rosette about 3 inches in diameter, each leaf consisting of two parts, the lower part being linear, and terminated by two distinct lobes, about the size of the thumb-nail. The margin of each lobe is fringed with cilia, and the disc is furnished with from three to five hairs. On these being touched by an insect, the lobes immediately collapse like a common rat-trap, and remain closed until the insect ceases to move. This action can also be witnessed by touching the hairs with a fine point. It is a very rare plant, being found in a very small area near Wilmington, in South Carolina, United States. Of late much has been said of this and other insect-catching plants, and it is proved by experiments that the insects are absorbed by the tissues of the plant, it is presumed for the purpose of promoting its growth, and that when artificially fed with pieces of flesh, the increased growth of the plant becomes evident. Be this as it may, it is quite certain that they thrive as well without such food.

Several other plants are provided with special organisms

evidently for the purpose of entrapping flies and other insects, of which the Pitcher Plant, Side-saddle Flower, Darlingtonia, and Sundews, are well-known examples. In these plants it has been proved that the decomposed matter of the insects enters the tissues of the plants for the supposed purpose of nutrition. In Swallowworts, Birthworts, Orchids, and others, the insects are entrapped for the purpose of assisting the fertilisation. Many plants having viscid leaves are also fly-catchers, and are often thickly covered with flies; but for what purpose is not very evident (*see* Pitcher Plants, etc.)

Veratrine. (*See* Sabadilla.)

Vermicelli. (*See* Wheat and Macaroni.)

Vervain (*Verbena officinalis*), a weedy plant of the Verbena family (Verbenaceæ), native of this country, growing abundantly by roadsides and in waste places. In the time of the Druids it was held in high repute, and was worn as a charm against evil, and for good luck; but the advance of knowledge makes the history of Vervain, like many other things, only curious as legends. Verbenas have become favourite plants for ornamental flower-beds, a great number of varieties having come into notice of late years, which first originated from the scarlet-flowered species, *V. Melindres*, a native of South Brazil. The Lemon-scented Verbena, known either as *V. triphylla* or *Aloysia citriodora*, is a stiff-branching shrub, with whorls of three leaves, native of Chili, and was introduced into this country about the end of the last century. It is hardy in many parts, and on account of its fragrance is often to be seen growing against cottages.

Vetch. (*See* Tare.)

Victoria Lily (*Victoria regia*), a plant of the Water-lily family (Nymphæaceæ). This remarkable plant was first discovered by a German botanist in 1801, and afterwards seen by several others in different parts of tropical America. It was not, however, brought into special notice till found by Sir R. Schomburgk in British Guiana in 1837, and introduced into the Royal Gardens, Kew, 1847. On account of its remarkable

appearance it has yearly excited public curiosity. In its native country it is a perennial, having a long under-water rhizome, like the yellow water-lily. In this country it seldom lives through the winter, but is readily grown from seeds each year. The plant consists of a crown producing leaves and flowers. The leaves when full grown measure 6 or 7 feet in diameter, and are perfectly circular, with the margin turned up about two inches, resembling a large tray. The under side is full of raised ribs, and very prickly. They are attached by their centre to a stalk which when full grown is often not less than 10 feet in length, and about the thickness of the finger. The leaves are produced in succession round the crown from left to right, each, when the plant is perfect, producing a flower-bud in its axis, which gradually rises on a stalk to the surface, opening in the afternoon. The flower consists of numerous petals of a pure white, and when fully expanded is from 10 inches to 1 foot in diameter; it then emits a powerful and pleasant odour. During the morning of the next day it partially closes, expanding again in the afternoon, the colour then being pink, and on the third day it finally closes and withers.

Vinatice Wood. (*See* Laurel.)

Vine (*Vitis vinifera*), a tendril climbing shrub, having long, slender branches, of the Grape Vine family (Ampelideæ), supposed to have been originally a native of the region of the Caspian, and early cultivated in Western Asia, through which it has spread, and is now cultivated in the temperate zones of both hemispheres. The fruit is a berry, growing in bunches, and called Grapes. The chief manufactured products of the grape are wine and brandy, the former obtained from the juice by fermentation, the latter by distillation. The Vine was early cultivated in Egypt and Southern Europe, and is supposed to have been introduced into England by the Romans. It appears to have been extensively cultivated by the monks for wine-making; but on account of the seasons not being favourable, has long ceased to be grown for that purpose. The great wine and brandy producing districts are the countries of the Rhine,

France, Portugal, and Spain, from whence the chief supplies come to this country. Wine is now also made in South Africa, the Australian Colonies, and in California. The different qualities are due to the differences of soil, climate, the various kinds of grape, and mode of manufacture. It is extensively grown in hothouses in this country; many fine varieties have been obtained by cultivation, and bunches have lately been produced in Scotland weighing 25 or 26 lbs. each. The weight of these bunches seems to explain the passage in the Bible, of the spies carrying the bunch of grapes on a staff between two. In 1846-47 grapes in the hothouses in this country, and ultimately throughout the wine countries of Europe, were attacked by a mildew fungus, *Oidium tuckeri*, which in some cases completely destroyed the crops. This in a few years disappeared; but a more formidable enemy has taken its place, in the form of a small insect, *Phylloxera vastatrix*, which breeds and lives on the roots of the vine to such an extent that in a comparatively short time it completely destroys the plant. No remedy has yet been found for it. The destruction of this pest is of so important a character that in 1874 the French Government offered a large reward for the discovery of a means of destroying it, and preventing its spread. During 1880 another Vine mildew has made its appearance in France. It attacks the leaves of the Vine about the time of the vintage; they become brown and shrivelled, as if scorched by the sun or bitten by the frost, and this is found to be caused by a mildew-mould. When it first appears it is of a pure white colour, which changes to a leaden tint. It has received the name of *Peronospora viticola*. It is very similar in appearance to *Peronospora infestans*, the potato mildew. Raisins are the dried berries of the grape. The name Vine is also popularly applied to climbing plants in general.

Vine of Sodom.—In the Bible we read, “Their vine is of the vine of Sodom and of the fields of Gomorrah; their grapes are grapes of gall, their clusters are bitter.” Josephus, in his *History of the Jews*, says—“Which fruits have a colour as if

they were fit to be eaten, but if you pluck them with your hands they dissolve into smoke and ashes." Much difference of opinion prevails among modern writers as to what the plant above spoken of is; but if we restrict the inquiry to the words, "their vine is the vine of Sodom," and take the word vine as a name for trailing and climbing plants in general, with Josephus's description of the fruit, it seems to lead us to believe that the plant was the Colocynth (*see Colocynth*).

Another plant (*Solanum sodomæum*) has received its specific name from its being supposed to be the fruit that tempts to the eye, and turns to ashes on the lips. It is abundant in the valley of the lower Jordan, and the region of the Dead Sea, especially near the remains of what Josephus calls the City of Sodom. It is, however, not a vine, but a rude-growing, stiff-branched, spiny shrub, 4 or 5 feet high. The fruit is about the size of a small apple, and when ripe of a yellowish colour, fair to look at. It is pulpy inside. When ripe, the shell hardens, and the inside dries up, and on being broken, it emits what appears to be the "dust and ashes" of Josephus, the ashes, no doubt, being the seeds. Of other plants mentioned as producing the Apple of Sodom, *Calotropis procera* is one. It is a small gouty tree of the Swallowwort family (Asclepiadaceæ), growing abundantly about the south end of the Dead Sea. Its fruit is a follicle, about the size of a small apple, and completely filled with fine silky hairs, to which the seeds are attached, and certainly cannot be compared to dust and ashes.

Vinegar Plant is the mycelium of a fungus of the nature of dry-rot, and can be generated in a mixture of sugar, treacle, and water, placed in a shallow vessel. After a certain period a filamentous mycelium appears on the surface of the water, which thickens, becoming, according to age, a tough leather-like substance, the water becoming a good vinegar. This process is hastened by impregnating the new mixture with a small portion of the old. It is one of the forms of the common mould (*Penicillium glaucum*).

Violet (*Viola odorata*), a perennial herb of the Violet family

(Violaceæ), native of this country, growing on banks and waysides. The Violet is used in medicine in the preparation of Syrup of Violets ; it is considered to have aperient and emetic properties. The scent of the Violet makes it a favourite with all classes. In the spring it is largely collected by flower-gatherers and sold in bunches in all the principal towns. The double variety is highly prized and is extensively cultivated in gardens, especially the sort called Neapolitan, which, on account of its forming a short stem, is called the Tree Violet.

Shakespeare says, "I think the king is but a man as I am ; the violet smells to him as it does to me."

V. tricolor, an annual native of this country, has small white and yellow flowers, but by cultivation and cross-breeding many varieties have been raised, remarkable for their large size and beautiful various-coloured flowers, popularly known by the name of Heartsease and Pansies.

Violet-wood. (*See* Myall-wood.)

Viper Grass. (*See* Scorzonera.)

Virgin's Bower (*Clematis Vitalba*), a slender-stemmed climber of the Buttercup family (Ranunculaceæ), native of this country, climbing over hedges, bushes, and trees, and is in common use for covering garden arbours. It is also called Traveller's Joy and Old Man's Beard.

Virginian Creeper (*Ampelopsis hederacea*), a tendril, clinging climber of the Vine family (Ampelideæ), native of North America. This plant has no special property except that it is useful in covering naked walls, to which it clings by tendrils, the points of which adhere to the walls. It presents a very showy appearance in autumn, its leaves, which are digitate, turning red before they fall.

Vitivert, an Indian name for Cuscus.

Wallaba, a name in Demerara of *Eperua falcata*, a large tree of the family Leguminosæ, attaining a height of 50 feet. It has winged leaves and red flowers, produced in long-stalked drooping bunches ; its pod is curved in form of a hatchet, containing three or four very flat seeds ; its wood is of a bright

red-brown colour, marked with whitish streaks, hard and heavy, but somewhat coarse-grained; it splits readily, and being impregnated with a resinous oil, is durable, and used for shingles, palings, etc. The bark is bitter, and is used by the Indians as an emetic.

Wallflower (*Chieranthus Cheiri*), a perennial plant of the Cabbage family (Cruciferae), native of Southern Europe, growing on walls and rocky places. It was introduced into this country more than 300 years ago, and its fragrance has led it to become a general favourite. It seldom grows more than a foot in height; in its natural state the flowers are single and of a yellowish colour, but by cultivation various fine-coloured double flowers have been introduced, of which many acres are cultivated for the supply of the markets, especially near London.

Walnut (*Juglans regia*), a tree of the Walnut family (Juglandaceae), attaining a height of 60 or more feet, native of the region of the Caspian and eastward through the Himalaya to China, coming through Persia westward. It was cultivated in Palestine in the time of Solomon, and early extended West through South Europe, and is recorded to have been cultivated in this country more than 300 years ago. The wood of the Walnut is valued by cabinetmakers for its beautiful veining and dark colour, the plain wood being used for gunstocks. An oil is extracted from the nuts equal to olive oil, which is used by painters, and forms an article of trade. It is also used in soap-making.

The edible nutty part of the Walnut is the two lobes (cotyledons) which are crumpled up in the shell. Although a considerable quantity of Walnuts are produced in this country, they nevertheless fall far short of the demand, large quantities being imported from France, Belgium, Holland, the Two Sicilies, and other places. In 1870, 152,681 bushels were imported, valued at £42,638. Many trees of large size and apparent old age are to be found in this country; one in Somersetshire being 60 to 70 feet high, with a girth near the ground of 18 feet, and the circumference of branches 300 feet. This tree has been known to produce 25,000 nuts in a year.

Walnut, Black (*Juglans nigra*), a large tree native of North America. Its wood is much valued for furniture and also for making gunstocks; its fruit is globose, but the kernel is not palatable.

Wampee (*Cookia punctata*), a small tree with large winged leaves, of the Orange family (Aurantiaceæ). The fruit is a berry the size of an ordinary grape, with a thin but hard woody rind of a yellowish colour, containing a pulp tasting somewhat like that of grapes combined with a peculiar flavour. It is esteemed in China.

Waratah, a name for the red anemone-flowered Camellia (*Camellia japonica*), also of *Telopea speciosissima*, a shrub with slender rod-like stems 8 to 10 feet high, bearing splendid scarlet flowers, belonging to the family Proteaceæ, native of New South Wales. About fifty or more years ago it was a great favourite with amateurs, but being difficult of cultivation it is now seldom seen.

Water Caltrops. (See Chestnut, Water.)

Water Celery (*Ranunculus sceleratus*), an annual of the Buttercup family (Ranunculaceæ), native of Britain, growing abundantly in ditches and damp places. It is something like celery, but highly acrid, blistering the mouth and skin; it is said to be used by beggars for making artificial sores. In Scotland the same use is made of the Lesser Spearmint (*R. Flammula*), but wounds so made often become incurable.

Water-cress. (See Cress.)

Water Crowfoot (*Ranunculus aquatilis*), native of this country, and, as its name implies, growing entirely in water, occupying rivers, ditches, and ponds, to a great extent, giving the surface a gay appearance with its pretty white flowers. It has leaves of two kinds, the floating ones being like little round shields, and the submerged ones finely divided and threadlike. This is one of the few wholesome species of the family. In some parts of England cows are entirely fed on it during winter; they as well as horses and hogs eat it greedily.

Water Dropwort (*Enanthe crocata*), a perennial herb of the

Carrot family (Umbelliferae), attaining a height of 2 to 3 feet, having compound much-divided leaves. It grows in ditches and watery places. It has thick parsnip-like roots, but differs from the parsnip in forming a cluster of these roots from the same crown. They are poisonous in the highest degree. The smell and flavour being like parsnips has led them to be mistaken for that root, and many fatal cases have occurred. A few years ago a band of convicts working on the embankments at Woolwich dug up a quantity of the roots, of which seventeen ate, all of whom became seriously ill, and four died; cattle have also died from eating the roots when thrown out of ditches.

Water Hemlock. (*See Cowbane.*)

Water Lemon. (*See Granadilla.*)

Water Lettuce, or Tropical Duckweed, a name in the West Indies for *Pistia stratiotes*, a floating plant growing on stagnant waters in the tropics; the plant grows in the form of a rosette, consisting of somewhat spongy wedge-shaped leaves which form an open cup; its flowers are small and produced from a sheath at the back of the leaves, the whole being of a yellowish colour; it increases rapidly by sarmenta, quickly covering a large surface of water. In the West Indies it is considered to produce malaria.

Water Lily, White (*Nymphaea alba*), **Yellow** (*Nuphar lutea*), plants of the Water Lily family (Nymphaeaceae), natives of this country and common throughout Europe. *Nuphar advena* is a native of North America; its seed-pods (so called) are an important article of food to the Indians, who collect them in large quantities and keep them for winter use. *Nymphaea caerulea*, *N. rubra*, *N. dentata*, *N. gigantea*, and others, are cultivated in the gardens of this country, being well known for their beautiful flowers; also *N. thermalis*, a white flowering species found in Hungary, which appears to be the same as the *N. Lotus* of the Nile. It is common in India, where it is held sacred; likewise in Egypt, where it is found rudely sculptured on the ancient idols (*see Lotos*).

Water Melon (*Citrullus vulgaris*, generally known as *Cucu-*

mis Citrullus), a trailing annual of the Gourd family (Cucurbitaceæ), grown extensively in warm countries for the sake of its cool refreshing fruit. It is not much cultivated in this country, but may sometimes be seen in fruit shops, being imported from Spain and Portugal. It is supposed to be the melon of Egypt, the loss of which the Israelites regretted.

Water Parsnip (*Sium latifolium*), an aquatic perennial of the Carrot family (Umbelliferae), having a stem about a foot in height furnished with winged leaves, and bearing its flowers in umbels. It is, like other water Umbelliferae, highly poisonous.

Water Tree of Sierra Leone (*Tetracera alnifolia*), a climbing shrub of the family Dilleniaceæ; it is called the Water Tree on account of its stems being full of water, which issues from it on its being cut.

Wattles, a name given in Australia to *Acacia floribunda*, *A. decurrens*, *A. dealbata*, *A. melanoxylon*, *A. affinis*, and others. They are middle-sized trees, having hard wood, especially that of *A. melanoxylon*, called Black-wood, which takes a fine polish. They are also of high commercial importance for their bark, which is astringent, and of late years has formed one of the principal parts of ships' cargoes to this country. To such an extent has the demand for this bark for tanning increased that whole districts of Acacia forests are fast disappearing in Australia.

Wax Palm.—There are two so called : 1. *Copernicia cerifera*, a fan palm native of Brazil, its cylindrical stem rising to a height of about 40 feet and measuring a foot in diameter, curiously studded its whole length with the permanent base foot-stalk of the leaves in the form of knobs. The wood is very hard, and is imported into this country for cabinet-work. Its young leaves are covered with a waxy secretion, which is obtained by shaking and beating them; it is imported into this country for making candles.

2. *Ceroxylon andicola*, a tall wing-leaved palm, native of the elevated regions of New Grenada. The whole of the stem and leaves is covered with a whitish waxy substance, which is collected from the stem by scraping; it is principally used

for making candles for the Roman Catholic churches, and forms an article of trade.

Wax Tree (*Ligustrum lucidum*), a small tree or handsome shrub of the Olive family (Oleaceæ), hardy in this country. It is a native of China. An insect that deposits a wax is said to feed on it. This is well known to be the case with *L. ibota*, a native of Japan, which is cultivated for that purpose.

Wax Tree, Japanese (*Rhus succedanea*), an evergreen tree of the Cashew Nut family (Anacardiaceæ), with shining winged leaves, native of Japan, having bunches of fruit like small grapes, which by pressure yield a wax analogous to beeswax; it is sometimes imported into this country, and is used in making candles and night lights. The plant has been long known in our botanic gardens, but is not sufficiently hardy to stand the cold of this climate.

Wax-work Shrub. (*See Staff Tree.*)

Weld (*Reseda Luteola*), an erect single-stemmed annual of the Mignonette family (Resedaceæ), attaining a height of 2 or 3 feet, native of this country, at one time much cultivated for the dye afforded by it, which, according to the different mordants employed, was either green, yellow, or blue; it is chiefly used in colouring paperhangings. The colour called Dutch pink is also obtained from it.

Welwitschia (*Welwitschia mirabilis*). — This remarkable plant was first discovered by Dr. Welwitsch growing in stony sandy plains on the plateau of Benguela in Africa, and in similar situations by other travellers in Damaraland. It consists of a hard woody obconical mass in old plants, not rising more than a foot above the ground, of nearly a circular form, and according to age varying in diameter from a few inches to 5 or 6 feet, having a long tapering taproot penetrating deeply into the earth. Its surface is nearly flat, rough, and cracked, and depressed towards the centre, seemingly as it were divided in two parts by a furrow. Round the margin are yearly produced several forked flower-stalks rising about a foot in height, bearing round or four-sided cones about an inch or more in diameter at the base. It has two leaves,

so called, which are of a leathery texture, and in old plants attain the length of 5 or 6 feet with the breadth of a foot or more, their apex being torn or divided, and they lie nearly flat on the ground in opposite directions, their original axis or point of development being overgrown above and below by the continued enlargement of the trunk, giving the leaves the appearance of being artificially inserted in two slits which extend nearly half-way round, almost meeting each other. It is difficult to determine the age of these plants; the largest, which have the appearance of flat tables lying on the ground, may be presumed as not being less than 500 years old. It belongs to a small family called Gnetaceæ, allied to the Fir and Yew family. It presents a contrast to the long, slender, whipcord-like branches of the genus *Ephedra*, which belongs to the same family. Several specimens are to be seen in the Museum at Kew.

Whangee Cane, a Chinese name for the stems of *Phyllostachys*, a genus of the Grass family (Graminaceæ), allied to the bamboo. The regularly jointed walking-sticks, known by the above name, are furnished by *P. nigra*; walking-sticks are also made of *P. bambusoides*.

Wheat (*Triticum vulgare*, of which there are many varieties), an annual corn-grass, cultivated in Egypt from remote antiquity, and now throughout all the temperate regions of the world, and in the Andes of South America, where it is cultivated at an elevation of 9260 feet. It may be considered the most important bread-food of the world, forming the staff of life to millions. Large quantities of wheat-flour are made into starch, and used for dressing woollen fabrics. (See Hard Grass.)

Wheel Tree, or **Paddle-wood** (*Aspidosperma excelsum*), a large tree of the Dogbane family (Apocynaceæ), native of Guiana. Remarkable in having the stem regularly fluted, often giving the appearance of several small trees stuck to a large one; they are cut away, and used by the natives as paddles. These trunks are sometimes 4 or 5 feet in diameter, and when cut transversely the section has the appearance of the rays of a wheel.

Whins. (See Furze.)

White Beam Tree (*Pyrus Aria*), a small tree of the Apple family (Pomaceæ). It has simple serrated leaves, snow-white on the under side. Its fruit is acerb. It is found wild in some parts of this country, but is more general on the Continent. Its wood is hard.

White Deal. (See Spruce Fir.)

White Tree. (See Cajeput Oil.)

White-woods.—The wood of several trees is so called. 1. American (see Tulip Tree.) 2. West Indian (*Bignonia leucoxy-lon*), a tree of the Trumpet Flower family (Bignoniaceæ). 3. *Nectandra leucantha*, a large tree of the Laurel family (Lauraceæ), native of Guiana; it attains a height of 60 to 70 feet, and a diameter of 2 to 3 feet. 4. Tasmanian (*Pittosporum bicolor*), a tree of the family Pittosporæ. It has light close-grained wood used by cabinetmakers, and employed for engraving purposes. 5. Norfolk Island (*Lagunaria Patersonii*), a soft-wooded small tree of the Mallow family (Malvaceæ).

Whortleberry. (See Bilberry.)

Wig Tree. (See Fustic.)

Wild Cinnamon. (See Canella Bark.)

Wild Mammee, a name in Jamaica for the fruit of *Rheedia lateriflora*, a tree of the Gamboge family (Guttiferæ). Its fruit is oblong, of a yellowish colour, and has a pleasant acid taste. The fruit of *R. edulis*, a native of Panama, is also eaten.

Wild Plum, the name at the Cape of Good Hope for the fruit of *Pappea capensis*, a small tree of the Soapberry family (Sapindaceæ). Its fruit consists of three ovaries united so as to form a drupe like a plum. A vinous beverage and excellent vinegar are made from the pulp.

Willow, Bitter (*Salix purpurea*), a small tree of the Willow family (Salicaceæ), an osier, extensively grown in some places; it is so remarkably bitter that even rabbits will not attack it.

Willow, Weeping (*Salix babylonica*).—As its name implies, it is considered to be a native of the country about Babylon, where it would appear to have flourished 3000 years ago, judging from the Psalmist, who thus beautifully writes, "By the rivers of

Babylon we sat down, yea we wept, when we remembered Zion. We hanged our harps upon the willows in the midst thereof." According to tradition, the pendulous nature of this willow was caused by the weight of the harps, and this habit was permanently imparted to the progeny of these trees. The tree, however, is not recorded to have been seen in modern times growing by the streams of Babylon, and it is now therefore generally understood that the trees which the Jews hanged their harps on were a species of poplar (*Populus euphratica*). It was also early known that the Weeping Willow is wild in China, and that it migrated westward. It is recorded to have been introduced into this country, and cultivated in the Royal Gardens, Hampton Court, in 1692, and it is said that the original tree was received by Pope, and planted in his garden at Twickenham, where it was long famed. In 1825 it came into special public notice on account of a twig having been received at Kew, taken from a tree growing over Napoleon's grave at St. Helena. To see this twig the crowd was so great that one Sunday, before the hour of opening, the gates were burst open. The twig grew into a fine tree 40 feet high, French visitors paying reverence to it by taking off their hats on passing it. In 1867 this popular tree was cut down.

Willow, White (*Salix alba*), also called the Huntingdon Willow. This species and *Salix Russelliana* are large trees, affording useful timber for many purposes, the wood being light and firm. Cricket bats are made of it.

Willow and Oak Mannas are produced in Kurdistan, the latter being an exudation on the upper side of the leaves of *Quercus mannifera*; it is produced during the hottest months of the year. The natives cut the branches and steep them in boiling water until the manna is entirely dissolved; they are then taken out, and the fluid evaporated to the consistence of thick honey. When cool it is shaped into flat round cakes, which are sold as a sweetmeat. Being found on the upper surface of the leaves, as well as upon stones, the natives suppose that it falls from the sky; they call it Ghiok helvahsée, which

means the sweet bread of heaven. It possesses no purgative properties.

A similar kind of manna is produced on a species of Willow (*Salix mannifera*?) which is common at Van and Armenia. During the summer season the leaves and branches become covered with a syrupy fluid, which is said to be the production of a small insect (a species of bug), common on these trees.

It is probable that these mannas are not the exudations of the sap of the trees, but secretions of insects similar to the honey-dew common on lime trees in this country.

Winterberry, a name in North America for the species of *Prinos*, a genus of the Holly family (Aquifoliaceæ); they are bushy evergreen shrubs with oblong, lanceolate, smooth leaves, and small inconspicuous flowers. *P. verticillatus*, *P. glaber*, and *P. lucidus* have been long cultivated as ornamental shrubs in this country.

Winter's Bark (*Drimys Winteri*), a small tree of the Magnolia family (Magnoliaceæ), native of Terra del Fuego, and extending northwards through Chili. It has beautifully smooth leaves, of an oblong lance form, generally silvery white on the under side. The bark was brought into repute by Captain Winter as an antiscorbutic, so long ago as 1579, he having found it very efficacious in cases of scurvy among his crews. Other remedies, however, having since been discovered, it has fallen into disuse.

Winter Cherry (*Physalis Alkekengi*), a perennial herb of the Nightshade family (Solanaceæ), native of the South of Europe, having fruit like a small cherry, which becomes enclosed in the enlarged leafy permanent calyx; in some parts the fruit is eaten, but is much surpassed by what is called the Cape Gooseberry (*Physalis edulis*), a native of tropical America. It is a weak sub-erect plant, cultivated in some gardens for its fine-flavoured luscious fruit.

Winter Green. (See Shallon.)

Witches. (See Club Moss.)

Woad, also known by the name of **Dyer's Weed** (*Isatis tinctoria*), a biennial of the Cabbage family (Cruciferae), attain-

ing a height of 3 or 4 feet, a native of this country, and throughout Europe it has been long famed as yielding a dye obtained by macerating the leaves in water. Its use is rapidly dying out in this country, and it is manufactured now only at Parsons Drove near Wisbech.

Woad Waxen. (*See* Kendal Green.)

Wold-wolle, a fibre, prepared in Germany from the leaves of *Pinus sylvestris*, used for stuffing pillows, mattresses, etc., also woven into blankets, counterpanes, etc. A similar kind of pine-wool is made from the leaves of *P. Laricio*.

Wolf's-bane. (*See* Aconite.)

Wood Apple. (*See* Elephant Apple.)

Woodbine, or **Honeysuckle** (*Lonicera Periclymenum*), a twining shrub of the Woodbine family (Caprifoliaceæ), attaining a considerable height on trees, native of this country. It is a favourite for forming arbours and planting against houses, and is prized for its sweet-scented flowers. There are a number of other species cultivated in gardens as ornamental climbers, *L. sempervirens* being called the Trumpet Honeysuckle.

Wood Oil, or **Gurjun Oil**.—This is obtained from *Dipterocarpus turbinatus*, a magnificent tree of the Dryobalanops family (Dipterocarpaceæ), attaining a height of 200 feet and a girth of 10 feet. It is a native of Lower India. Its wood is hard, and used for boat-building and other purposes. It yields an oil, which is obtained by making a deep notch in the trunk near to the ground, and applying fire, which chars the wood, and the oil then flows. It is used as a varnish, and medicinally as a substitute for copaiba balsam. It is chiefly imported from Moulmein. *D. alatus* and *D. incanus* are magnificent trees, natives of Chittagong, also yielding wood oil, and are equally valued for their timber. In Java the resin of *D. trinervis* is smeared on plantain leaves for making torches. In Sumatra it is mixed with rotten wood and made into candles.

Wood Paper.—The making of the material called Wood Paper originated in the United States some years ago, where it continues to be still extensively carried on. The trees of which

it is made consist chiefly of Maple, Beech, Cherry, Ash, and Oak. The trunks of the trees are cut into lengths not exceeding 4 feet ; the logs are then placed in a steam chamber, where they remain for three or four hours ; they are then placed in a revolving lathe, and by the aid of the knife the bark and all superfluity is removed ; and when the log becomes perfectly smooth and cylindrical, the knife is then graduated to cut it a certain thickness, and by the constant revolution of the log a continuous thin sheet is pared off, which is cut into lengths according to requirements, and made into packages of different sizes, ready for exportation. It partakes of the colour and marking of the tree from which it is made. It is used for veneering furniture, and for covering the walls instead of paper.

Woodruff (*Asperula odorata*), a perennial of the Madder family (Rubiaceæ), native of this country, generally growing in shady places in woods. It is peculiar that while green it emits no smell, but when dry it has a strong odour of the principle termed Coumarin. In Germany it is put into wine, giving it a peculiar flavour known under the name of "Mai trunk," meaning Woodruff Wine. (See also Coumarin.)

Wood Vinegar. (See Pitch Pine.)

Woody Pear, a name for the fruit of *Xylomelum pyriforme*, a small tree, with opposite leaves, of the natural order Proteaceæ, native of New South Wales. It is remarkable for its fruit, which bears the exact resemblance and size of an ordinary pear, but is attached by the broad end. It consists entirely of a hard, woody substance, difficult to cut. When ripe, it splits lengthwise, and contains a flat winged seed.

Worm Grass, or **Pink-root** (*Spigelia marilandica*), a perennial herb of the Nux Vomica family (Loganiaceæ), native of the United States. It attains a height of about a foot or more, having ovate, opposite leaves. Its flowers are funnel-shaped, of a beautiful carmine colour, borne in terminal spikes. This and an allied species, *S. Anthelmia*, are highly purgative, and efficacious in destroying intestinal worms, hence its name Worm Grass.

Wormwood.—*Artemisia Absinthium*, *A. maritima*, natives

of Britain, and *A. pontica*, of Germany, Eastern Europe, and Western Asia. They belong to the Composite family (Compositæ), and are all hardy perennials, having the same habit and properties, being aromatic, intensely bitter, and in great repute as a vermifuge, hence the name Wormwood. They are used to prevent moths and other insects from infesting clothes and furniture. Wormwood is frequently mentioned in the Bible, and is symbolical of bitter calamity. It is frequently used as a substitute for hops (*see* Absinthe and Southernwood).

Wrack. (*See* Fucus.)

Wukkum. (*See* Sappan-wood.)

Yacca, a name in the West Indies for *Podocarpus Purdieanus* and *P. coriaceus*, large trees of the Yew family (Taxaceæ), native of Jamaica. They afford excellent hard timber, used for many purposes.

Yaka, or **Wayaka**, a name given by the Fijians to *Pachyrhizus angulatus*, a plant of the Bean family (Leguminosæ), having a climbing stem, and trifoliate, angular leaves, rising from a thick root, or, more properly speaking, an underground stem, 6 to 8 feet in length, and as thick as a man's thigh. In the Fijis and New Caledonia it is in times of scarcity used as an article of food. When cooked it is of a dirty white colour, and has a slightly starchy, but insipid flavour, much inferior to that of the wild yam. The fibre of the climbing stems is very tough, and the Fijians make their fishing-nets of it. The plant is widely diffused, being found throughout tropical America, East and West Indies, Mauritius, and islands of the South Seas.

Yam (*Dioscorea sativa*, *D. aculeata*, and several other species), climbing plants of the Yam family (Dioscoreaceæ), natives of India and other warm countries of the East, where they are extensively cultivated, and take the place of the potato of more temperate climes. There are many varieties varying in size and quality, but all contain more or less of a nutritive farina. The Yam was early introduced into the West Indies, where it forms a great part of the food of the negro population. Yams are imported into this country, but not in any quantity.

Yam, Chinese (*Dioscorea batatas*), a native of China and Japan, where it is extensively cultivated. It differs from the preceding in having a spindle-shaped, black root, about the size of a parsnip, 2 to 3 feet long. It has been introduced into this country, and is perfectly hardy; indeed at one time expectations were entertained that it might prove a good substitute for the potato; but so long as potatoes are to be had it will not find much favour, being far inferior to them as a vegetable.

Yangmae, a name in China for the fruit of *Myrica Nagi*, a small tree of the Candleberry Myrtle family (Myricaceæ), native of China. In the island of Chusan it is described by Mr. Fortune as a bushy shrub or tree, 15 to 20 feet in height, and when he saw it, "it was loaded with a dark-red fruit, not very unlike the fruit of the strawberry tree (*Arbutus*), but much larger. There was also a variety with yellowish fruit. The natives were busily engaged in gathering the fruit, and packing it in baskets for the markets. The gatherers offered me liberal supplies of this fine fruit."

Living plants were introduced into this country in 1844, but it has not received the patronage of fruit-cultivators that it seems to merit. *M. Nagi* is also known in Western India, but its fruit is very inferior to that of the Chinese. It is probable they are two distinct species.

Yari-Yari, a name in Guiana for Lancewood (which see).

Yeast, or **Barm**, a name given to the frothy scum that forms on the surface of fermenting sugary liquids, and rises from the bung-holes of barrels of newly-brewed beer. The microscope shows that this froth consists of particles which multiply with extraordinary rapidity when placed in a moderately-warm temperature. By experiments it has been ascertained that the particles or globules germinate; and they are considered to be the spores of a mould fungus, belonging to the genus *Torula*, the spores of which are but slightly united, the mycelium being almost absent. Yeast is not only employed in hastening the fermentation of worts, it also is an important agent in leaven-

ing dough in bread-making. For this purpose the yeast is dried and formed into a cake or paste, known as German Yeast.

Yellow Berries. (*See* Buckthorn.)

Yellow Iris (*Iris Pseudacorus*), and **Gladwin, or Roast-beef Plant** (*C. fetidissima*), of the family Iridaceæ, two beautiful species, natives of this country, growing in ditches, and on the margins of ponds and streams. The seeds of the first are said to have been used as a substitute for coffee. (*See* Iris.)

Yellow-root (*Xanthorhiza apiifolia*), a low shrub of the Buttercup family (Ranunculaceæ), seldom exceeding 2 feet in height, having parsley-like leaves and inconspicuous flowers. It is a native of the South United States of America. Its roots are of a pale yellow, and were originally employed as a dye. They are bitter, and have some reputation with American doctors as a tonic.

Another North American Yellow-root is *Hydrastis canadensis*, which is also called Yellow Puccoon and Orange-root; it is a perennial of the same family as the above, about a foot in height, with palmate-lobed leaves, and inconspicuous flowers; its fruit is similar to the raspberry, its juicy flesh being of a bright crimson colour. The root is a bright yellow, and used as a dye, and also as a tonic medicine.

Yellow-wood, a name applied in different countries to trees having wood of a yellow colour. Different species of the genus *Xanthoxylum*, which means yellow-wood, are so called.

Yellow-wood, American (*Virgilia lutea*), a tree of the Bean family (Leguminosæ), native of North America. It has winged leaves, and attains a height of 40 to 50 feet. The wood is hard. Its yellow flowers and winged leaves make it an ornamental tree, but it seldom exceeds 10 to 12 feet in height in this country.

Yellow-wood, Indian (*Podocarpus latifolia* and *Chloroxylon Swietenia*). (*See* Satin-wood.)

Yellow-wood, Moreton Bay (*Acronychia lævis*, Forst.; *Cyminosma oblongifolium*, Cunn.), a small tree of the family Xanthoxyllaceæ, native of Moreton Bay.

Yellow-wood, Queensland (*Flindersia Oxleyana*, better known as *Oxleya Xanthoxyla*), a tree 40 to 50 feet high, of the Mahogany family (Cedrelaceæ). The wood is used for furniture.

Yellow-wood, South African (*Podocarpus elongatus*), a large tree of the Yew family (Taxaceæ), a useful timber tree.

Yellowwort, the common name for *Chlora perfoliata*, a pretty annual herb of the Gentian family (Gentianaceæ), native of this country; it is an erect single-stemmed plant, about a foot in height, with few root-leaves, and small, opposite, perfoliate stem leaves; the flowers are produced singly on short terminal branches; they are yellow and showy, opening only during sunshine. It differs from the rest of Gentians in having 8 stamens. The whole plant is intensely bitter, used as a tonic; it also yields a yellow dye.

Yerba. (See Paraguay Tea.)

Yercum. (See Mudar.)

Yew (*Taxus baccata*), a tree of the Yew family (Taxaceæ), native of the temperate regions of Europe and Asia. It is famed for the age of some of the trees and for the durability of its wood, remains having been found in the ruins of ancient Nineveh. It is much planted as an ornamental tree, and is also used in forming edges. When grown singly, it forms a handsome tree, 30 to 40 feet high. The red succulent cups in which the seeds are seated are frequently eaten for their agreeable taste. In winter they form an important source of food to the feathered tribe. The seeds themselves are, however, poisonous. The branches and leaves are in a high degree poisonous to horses and horned cattle, and act on man like *Digitalis* in arresting the action of the heart. The Irish Yew is a variety.

Yulan, a Chinese name for *Magnolia conspicua* (see *Magnolia*).

Zachun, the Arab name of an oil expressed from the fruit of *Balanites ægyptiaca*, a thorny shrub or small tree of forbidding aspect belonging to the family Amyridaceæ. The leaves are binate; the flowers small, greenish white, fragrant, on

short axillary racemes; the fruit is about the size of a walnut, and when ripe of a greenish colour. It is common throughout the deserts of Western Asia, Egypt, and many parts of North and Western Africa. It also grows abundantly in the region of the Dead Sea, and has extended into India, and may be called truly a plant of the desert. It is supposed to be one of the plants that yielded the balm of Gilead carried by the Ishmeelites into Egypt. In Palestine, at the present day, the oil obtained from its fruit is of a healing nature, and is extensively prepared by the Arabs, and sold by them to the pilgrims. The wood is hard, and used by the turners of Jerusalem for making walking-sticks. In Western Africa an intoxicating drink is made from its fruit.

Zamang, the Spanish name of a tree, native of Venezuela, of which Humboldt says—"We saw in the evening, at a league distant, an object which appears in the horizon like a round hillock covered with trees. It is neither a hill nor a group of trees close to each other, but one single tree, the famous *Zamang-del-Guayre*, remarkable for the enormous extent of its branches, which form a hemispheric head 576 feet in circumference, the diameter of the stem being 9 feet near the ground." It belongs to the *Mimosa* section of Leguminosæ, and is a species of the genus *Pithecolobium* (*P. saman*). Seeds taken from the tree were raised in the Botanic Garden, Trinidad, in 1820; it appears to be fast-growing when young, a tree 40 years old measuring 15 feet in circumference near the ground. It has thick, flattish, curved pods, about 8 inches in length and 1 in width, containing a sweetish pulp; they are in common use for feeding cattle, and for that purpose the tree is now cultivated in different countries. It is also known as the Rain Tree.

Zamia, a name of the genus of the Cycad family (Cycada-cæ). They have globose cylindrical stems, the interior of which is soft and spongy, increasing in height by the successive yearly development of a crown of winged leaves, the pinnæ of which are firm and rigid, entire, toothed, or spiny. The fructification consists of male and female cones, produced on separate plants,

in some species nearly 2 feet in length and 6 inches in diameter, formed of fleshy scales ; the seeds are nut-like, produced on the under side of the scales of the female cone. About 50 species are recorded. They are widely distributed, being found chiefly in the West Indies, Mexico, South Africa, and Australia ; in the latter country some attaining a height of 30 to 40 or more feet. They have been by modern botanists characterised under separate genera : those of the Cape of Good Hope form the genus *Encephalartos*, and of Australia *Macrozamia*. Their stems contain a kind of sago (*see* Sago and Caffer Bread). They are found in a fossil state in this and other countries.

Zebra Poison (*Euphorbia arborea*), a succulent-branched almost leafless tree of the Spurgewort family (Euphorbiaceæ), native of South Africa. Its milky juice is highly poisonous, whole herds of zebras having been killed by branches of it being placed in the water which they drink. It is also used for poisoning arrows.

Zebra-wood.—The wood of several distinct trees is so called. 1. *Omphalobium Lamberti* (now referred to *Connarus*), a large tree of the family Connaraceæ, native of Guiana ; it is very scarce ; its wood is of a light-brown colour, with dark stripes. It makes handsome furniture. 2. *Eugenia fragrans*, a small tree of the Myrtle family (Myrtaceæ), native of Jamaica. 3. *Guettarda*, a shrub or small tree of the Cinchona family (Cinchonaceæ), native of the East Indies.

Zelkona Tree (*Planera Richardi*), a tree of the Elm family (Ulmaceæ), native of North America, attaining a height of 70 or 80 feet, having much the appearance of the elm, and in the countries where it is abundant is used for the same purposes as the elm, especially for making furniture.

INDEX OF THE GENERA NOTICED IN THE PRECEDING PAGES.

- ABELMOSCHUS, 280.
 Abies, 174, 323, 411, 423.
 Abrus, 42.
 Abuta, 313.
 Acacia, 1, 8, 30, 53, 80,
 98, 99, 177, 203, 236,
 282, 376, 384, 436.
 Acæna, 376.
 Acanthus, 3.
 Acer, 267, 329.
 Achillea, 383.
 Achlya, 186.
 Achras, 69.
 Acmena, 245.
 Aconitum, 4.
 Acorus, 399.
 Acrocomia, 254.
 Acrodielidium, 290.
 Acronychia, 446.
 Acrostichum, 193.
 Actæa, 36, 382.
 Adansonia, 37, 57, 142.
 Adenanthera, 43, 367.
 Adiantum, 91.
 Æcidium, 39.
 Ægilops, 205.
 Ægle, 30, 268.
 Aërides, 302.
 Æschynomene, 376.
 Æsculus, 109.
 Æthusa, 179.
 Agaricus, 6, 14, 54, 279, 413.
 Agathophyllum, 290.
 Agave, 6, 12, 326.
 Agrimonia, 6.
 Agrostis, 174.
 Ailanthus, 6.
 Aletris, 128.
 Aleurites, 83.
 Alhagi, 80, 265.
 Allium, 113, 299, 353.
 Alnus, 8.
 Aloë, 12.
 Aloëxylon, 78.
 Aloysia, 428.
 Alpinia, 188.
 Alsophila, 171.
 Alstonia, 155.
 Althæa, 213, 259.
 Amanita, 14.
 Amaryllis, 14.
 Amelanchier, 375.
 Ammophila, 268.
 Amomum, 197.
 Ampelodesmos, 155.
 Ampelopsis, 432.
 Amygdalus, 11, 315.
 Amyris, 163, 357.
 Anacardium, 76, 96.
 Anacharis, 333.
 Anacyclus, 316.
 Anamirta, 122.
 Ananassa, 321.
 Anastatica, 355.
 Anchusa, 9.
 Andira, 74, 314.
 Andromeda, 16.
 Andropogon, 64, 78, 145,
 193, 243.
 Anemone, 16.
 Anethum, 154, 386.
 Angelica, 16.
 Angiopteris, 171.
 Angræcum, 136, 302, 407.
 Anilidotus, 277.
 Anona, 9, 68, 107, 133,
 146, 386, 400.
 Anopterus, 241.
 Anthemis, 81.
 Anthistiria, 232.
 Anthospermum, 15.
 Anthoxanthum, 136, 171,
 207, 394.
 Anthriscus, 109.
 Antiaris, 358, 424.
 Apium, 103.
 Aplotaxis, 134.
 Apocynum, 211.
 Aponogeton, 240.
 Aporosa, 236.
 Aquilaria, 160.
 Aquilegia, 128.
 Arachis, 161.
 Aralia, 16, 352.
 Araucaria, 21.
 Arbutus, 23, 43, 255.
 Archangelica, 16.
 Arctium, 69.
 Arctostaphylos, 23.
 Arduina, 284.
 Areca, 47, 74, 286.
 Argania, 24, 223.
 Aristolochia, 50, 201, 382.
 Armeria, 241, 411.
 Arnica, 413.
 Arracacha, 95.
 Artanthe, 270.
 Artemisia, 1, 82, 277, 362,
 386, 403, 443.
 Arthrostilidium, 35.
 Artocarpus, 61, 225.
 Arum, 158, 231, 362.
 Arundinaria, 35.
 Arundo, 156, 381, 414.
 Asagræa, 98, 358.
 Asarum, 26.
 Asparagus, 27.
 Asperula, 136, 257, 443.
 Asphodelus, 27.
 Aspidosperma, 343, 438.
 Asplenium, 49.
 Aster, 280.
 Astericus, 356.
 Astragalus, 204.
 Astrocaryum, 420.
 Atherosperma, 370.
 Atriplex, 299, 388.
 Atropa, 286.
 Attalea, 127, 131, 320.
 Aucuba, 28.
 Auricula, 44.
 Avena, 295.
 Averrhoa, 54.
 Avicennia, 264.
 Aydendron, 290.
 Azalea, 29.
 Azorella, 32.
 BACCAUREA, 346.
 Baccharis, 273.
 Backhousia, 238.
 Balanites, 31, 447.
 Balantium, 144.

- Baloghia, 55.
 Balsamodendron, 31, 41,
 195, 283.
 Bambusa, 35.
 Banksia, 214.
 Baphia, 82.
 Barosma, 65.
 Barringtonia, 51, 217.
 Basella, 388.
 Bassia, 70, 257.
 Batatas, 399.
 Batis, 364.
 Bauhinia, 260, 390.
 Bedfordia, 156.
 Begonia, 46.
 Benzoin, 387.
 Berberis, 38.
 Bergera, 245.
 Bertholletia, 61.
 Betula, 49.
 Beta, 46.
 Bignonia, 50, 92, 112, 419,
 439.
 Bixa, 24.
 Blakea, 274, 355.
 Blighia, 7.
 Blumea, 82.
 Boehmeria, 198, 346.
 Bolax, 32.
 Boldoa, 369.
 Boletus, 331.
 Bombax, 278, 378.
 Bongardia, 247.
 Bontia, 298.
 Borassus, 307, 309.
 Borago, 56.
 Boswellia, 181.
 Botrytis, 186.
 Bovista, 340.
 Brabejum, 11.
 Brassica, 73, 280, 281, 346,
 422.
 Bromelia, 325.
 Brosimum, 62, 137, 243.
 Broussonetia, 312.
 Brya, 161.
 Bryonia, 64.
 Bubon, 188.
 Bumelia, 68.
 Bunium, 160.
 Bursaria, 58.
 Bursera, 49, 246.
 Butea, 204, 340.
 Butyrospermum, 71.
 Buxus, 57.

 CACTUS, 75, 415.
 Cæsalpinia, 43, 56, 60, 155,
 179, 286, 325, 367.
 Cajanus, 153, 320.
 Caladium, 231.
 Calamus, 84, 157, 258.
 Calceolaria, 79.
 Calendula, 267.
 Calla, 419.
 Callistemon, 57.
 Callitris, 21, 23, 367.
 Callopisma, 79.
 Calluna, 207.
 Calodendron, 109.
 Calophyllum, 51, 77.
 Calotropis, 278, 431.
 Caltha, 268.
 Calyptranthes, 200.
 Calystegia, 275.
 Camassia, 341.
 Camelina, 346.
 Camellia, 80, 404, 434.
 Campanula, 346.
 Campomanesia, 305.
 Campyloneurum, 78.
 Cananga, 218.
 Canarium, 12, 113, 150,
 163.
 Canavalia, 304.
 Canella, 84.
 Canna, 220.
 Cannabis, 210.
 Capparis, 90, 280.
 Capraria, 407.
 Capsicum, 91.
 Carapa, 140.
 Carduus, 410.
 Carex, 120, 374.
 Cargillia, 330.
 Carica, 311.
 Carissa, 92.
 Carludovica, 311.
 Carolina, 378.
 Carpinus, 215, 223.
 Carpodinus, 325.
 Carthamus, 361.
 Carum, 7, 92.
 Carya, 215, 316, 320.
 Caryocar, 385.
 Caryophyllus, 120.
 Caryota, 307, 362.
 Casearia, 382.
 Cassia, 339, 375.
 Castanea, 110.
 Castanospermum, 110.
 Castilloa, 87, 89.
 Casuarina, 294, 398.
 Catalpa, 98.
 Catha, 233, 406.
 Cathartocarpus, 339.
 Cattleya, 302.
 Ceanothus, 406.
 Cecropia, 419.
 Cedrela, 74, 101.
 Cedrus, 99.
 Celastrus, 390.
 Celosia, 123.
 Celtis, 252, 285.
 Centaurea, 55.
 Cephaelis, 221.
 Cephalanthus, 73.
 Cephalotus, 326.
 Ceradia, 41.
 Cerasus, 107, 108, 256
 289, 336.
 Ceratonia, 93, 249.
 Cerbera, 303.
 Cercis, 229.
 Cereus, 76, 104, 415.
 Ceroxylon, 436.
 Cetraria, 218.
 Chærophyllum, 136, 190.
 Chamæcyparis, 100.
 Chamærops, 116, 169, 306,
 308, 412.
 Chara, 105.
 Chieranthus, 433.
 Chierostemon, 205.
 Chenopodium, 343, 388,
 406.
 Chickrassia, 257.
 Chiococca, 381.
 Chionanthus, 182.
 Chlora, 447.
 Chlorogalum, 384.
 Chloroxylon, 370, 446.
 Chondrus, 91.
 Chondodendron, 313.
 Chrozophora, 422.
 Chrysanthemum, 115.
 Chrysobalanus, 125, 320.
 Chrysophyllum, 391.
 Cibotium, 40, 341.
 Cicorium, 112, 164.
 Cicuta, 139.
 Cimicifuga, 67.
 Cinchona, 117.
 Cinclidotus, 277.
 Cinnamomum, 81, 118.
 Cissampelos, 313.
 Cissus, 345.
 Cistus, 238, 282.
 Citrullus, 128, 435.
 Citrus, 47, 119, 236, 242,
 245, 300, 375.
 Cladonia, 348.
 Clathrocystis, 130.
 Clathrus, 393.
 Clematis, 432.
 Clusia, 34.
 Cnicus, 410.
 Coccoloba, 242, 374.
 Coccus, 123.
 Cochlearia, 216.
 Cocos, 123, 254.
 Codarium, 401.
 Coffea, 125, 127.
 Coix, 43, 229.
 Cola, 127.
 Colchicum, 128.

Collophora, 138.
 Colocasia, 403.
 Colubrina, 200.
 Combretum, 72, 194.
 Commidendron, 373.
 Conferva, 130.
 Conium, 180, 209.
 Conocarpus, 73.
 Convalaria, 245.
 Convolvulus, 48, 275, 371.
 Cookia, 434.
 Copaifera, 32.
 Copernicia, 436.
 Coptis, 195, 274.
 Corchorus, 229, 231.
 Cordia, 15, 357, 374, 387, 417.
 Coriandrum, 132.
 Coriaria, 132.
 Corispermum, 412.
 Cornicularia, 418.
 Cornus, 58, 133, 156, 339.
 Corylus, 207.
 Corynocarpus, 232.
 Corypha, 400.
 Coscinium, 80.
 Couroupita, 85.
 Crambe, 231.
 Crassula, 141.
 Cratægus, 206, 270, 271, 411.
 Cratæva, 190.
 Crescentia, 78.
 Crithnum, 364.
 Crocus, 361.
 Crotalaria, 211.
 Croton, 96, 143, 238, 258, 422.
 Cryptocarya, 290.
 Cryptomeria, 100.
 Cryptostegia, 89.
 Cubeba, 318.
 Cucumis, 143, 271, 436.
 Cucurbita, 341, 427.
 Cuminum, 144.
 Cupressus, 100, 147.
 Curatella, 145.
 Curtisia, 206.
 Curcuma, 421.
 Cuscuta, 155.
 Cyathea, 171.
 Cycas, 146.
 Cyclopia, 407.
 Cydonia, 343.
 Cyminosma, 446.
 Cymopterus, 190.
 Cynara, 25, 93.
 Cynodon, 157.
 Cynomorium, 187, 345.
 Cynosurus, 207.
 Cyperus, 146, 188, 312.
 Cyripedium, 302.

Cytisus, 63, 237.
 Cyttaria, 45.
 DACTYDIUM, 217, 353.
 Dactylis, 423.
 Dædalea, 158.
 Dahlia, 148.
 Dalbergia, 53, 225, 356, 357, 379.
 Dammara, 139, 148.
 Daniellia, 182.
 Daphne, 56, 219, 389.
 Darlingtonia, 326.
 Datura, 152.
 Daucus, 94.
 Davallia, 206.
 Delabechea, 57.
 Delphinium, 392.
 Dendrobium, 302, 353.
 Dendrocalamus, 36.
 Desmodium, 409, 411.
 Dianthus, 120.
 Dichopsis, 204.
 Diccypellium, 121.
 Dieffenbachia, 159.
 Digitalis, 180.
 Dillenia, 154, 367.
 Dimorphandra, 276.
 Dionæa, 427.
 Dioscorea, 444, 445.
 Diospyros, 73, 151, 161, 190, 253, 254, 267.
 Dipsacus, 408.
 Dipterix, 136, 415.
 Dipterocarpus, 442.
 Dirca, 242.
 Dittelasma, 384.
 Dodecatheon, 140.
 Dolichos, 114, 216.
 Doona, 157.
 Dorema, 15.
 Dorstenia, 130.
 Doryphora, 369.
 Dracæna, 157, 411.
 Dracocephalum, 31.
 Dracunculus, 158.
 Drimys, 441.
 Dryobalanops, 82.
 Duboisia, 328.
 Duguetia, 239.
 Durio, 159.
 ECBALIUM, 389.
 Echinocactus, 75, 76, 208.
 Echinocystis, 51.
 Ecklonia, 419.
 Edgeworthia, 219.
 Edwardsia, 237.
 Elægia, 426.
 Elæagnus, 297.
 Elæocarpus, 43, 212.

Elæodendron, 298.
 Elais, 306.
 Eleusine, 273, 285, 345.
 Ellettaria, 92.
 Elymus, 268.
 Encephalartos, 76, 449.
 Entada, 51, 371.
 Eperua, 432.
 Epiphyllum, 76.
 Epipremnum, 414.
 Equisetum, 160, 294.
 Erica, 63, 207, 208.
 Eriobotrya, 250.
 Eriodendron, 377, 378.
 Erioglossum, 384.
 Eriophorum, 135.
 Erodium, 191.
 Erym, 243.
 Eryngium, 373.
 Erythræa, 103, 104.
 Erythrina, 43, 132, 231.
 Erythroxyton, 122, 223.
 Eucalyptus, 55, 165, 179, 227, 265, 319.
 Eucheuma, 227.
 Euchlæna, 409.
 Eugenia, 121, 202, 227, 242, 260, 355, 424, 449.
 Euonymus, 389.
 Eupatorium, 136.
 Euphorbia, 90, 98, 167, 449.
 Euryale, 196.
 Euryangium, 398.
 Eurybia, 280.
 Euterpe, 28, 30, 410.
 Excoecaria, 5.
 Exocarpus, 108.
 Exogonium, 226.
 FABA, 43.
 Fagopyrum, 67.
 Fagus, 44, 46, 404, 417.
 Fatsia, 352.
 Feronia, 163.
 Ferula, 25, 95, 170, 188, 361, 398.
 Festuca, 172.
 Feuillæa, 18.
 Ficus, 36, 88, 172, 325, 360, 400.
 Flacourtia, 331.
 Flindersia, 389, 447.
 Fœniculum, 169.
 Fœtidia, 393.
 Fragaria, 394.
 Fraxinus, 26, 264.
 Fritillaria, 143.
 Fuchsia, 182, 236.
 Fucus, 183.
 Fusanus, 43.

- GALBANUM, 188.
 Galipea, 17.
 Galium, 107.
 Garcinia, 189, 263.
 Gardenia, 154.
 Gastrolobium, 98.
 Gaultheria, 376, 406.
 Genipa, 190.
 Genista, 234.
 Gentiana, 190, 382.
 Geoffroya, 10.
 Geranium, 191.
 Gerrardanthus, 52.
 Gleditschia, 249.
 Glyceria, 265.
 Glycine, 386.
 Glycyrrhiza, 247.
 Gmelina, 408.
 Gomphocarpus, 90.
 Gonolobus, 144.
 Gordonia, 55.
 Gossypium, 134.
 Gouania, 106.
 Graptophyllum, 93.
 Grevillea, 379.
 Grias, 15.
 Guaiacum, 244.
 Guatteria, 239.
 Guettarda, 449.
 Guevina, 29.
 Guibourtia, 131.
 Guilandina, 43, 56.
 Guilielma, 315.
 Guizotia, 346.
 Gymnarrhena, 356.
 Gymnocladus, 234.
 Gynarium, 310.
 Gynocardia, 106.
 Gypsophila, 384.
 Gyandra, 104.
 Gyrophora, 418.

 HÆMANTHUS, 54, 331.
 Hæmatostaphis, 55, 330.
 Hæmatoxyton, 250.
 Hagenia, 145.
 Halesia, 383.
 Halimodendron, 364.
 Hancornia, 89.
 Harpagophytum, 197.
 Harpulia, 421.
 Hedera, 224.
 Hedysarum, 182, 265.
 Heisteria, 314.
 Heliamphora, 327.
 Helianthus, 228, 398.
 Heliotropium, 209.
 Helleborus, 209.
 Helotium, 200.
 Helvella, 276.
 Hemidesmus, 369.
 Hemileia, 126.

 Heracleum, 137.
 Herminiera, 377.
 Heuchera, 14.
 Hevea, 85, 89.
 Hibiscus, 14, 53, 233, 296, 356.
 Hierochloa, 214.
 Hippomane, 262.
 Hippophaë, 67.
 Hirneola, 228.
 Hirtella, 337.
 Hopea, 150.
 Hordeum, 39.
 Humirium, 217.
 Humulus, 215.
 Hura, 365.
 Hyacinthus, 217.
 Hydrastis, 446.
 Hymenaea, 131, 136.
 Hymenophyllum, 174.
 Hyoscyamus, 211.
 Hyphæne, 192.
 Hyssopus, 218.

 ICICA, 92, 102, 163.
 Ilex, 53, 213, 313, 406.
 Illicium, 17.
 Impatiens, 33, 417.
 Indigofera, 220.
 Inga, 202, 222.
 Inocarpus, 111.
 Inula, 163, 195.
 Ipomœa, 88, 226, 275.
 Iriarteia, 347.
 Iris, 179, 222, 303, 446.
 Irvingia, 153.
 Isatis, 441.

 JACARANDA, 225.
 Jacquinia, 58, 143.
 Jasminum, 227.
 Jateorhiza, 80.
 Jatropha, 319, 392.
 Jubæa, 131.
 Juglans, 433, 434.
 Juncus, 358.
 Jungermannia, 249.
 Juniperus, 99, 100, 230, 370.
 Justicia, 284.

 KÆMPFERIA, 188.
 Kalmia, 232.
 Kigelia, 360.
 Kingia, 199.
 Knightia, 349.
 Kokoona, 236.
 Krameria, 349.

 LABLAB, 236.
 Lachenalia, 140.
 Lactuca, 243.

 Lagenaria, 57, 439.
 Lagerströmia, 55.
 Lagetta, 238.
 Laminaria, 183, 419.
 Landolphia, 88.
 Lansium, 239.
 Larix, 239, 265, 423.
 Larrea, 142.
 Lastræa, 171, 258.
 Laurelia, 241, 369, 370.
 Laurus, 240, 369, 387.
 Lavandula, 241.
 Lavatera, 259.
 Lawsonia, 81.
 Lecanora, 144, 266.
 Leczythis, 368.
 Ledum, 406.
 Lens, 243.
 Leonia, 3.
 Leontice, 247.
 Leopoldinia, 320.
 Lepidium, 142.
 Lepidostachys, 236.
 Lepironia, 147.
 Leptospermum, 407.
 Lespedeza, 227.
 Leucadendron, 379.
 Leucæna, 42.
 Lewisia, 51.
 Liatris, 382.
 Libocedrus, 8, 23, 234.
 Lichen, 266.
 Licuala, 317.
 Ligustrum, 437.
 Liliun, 245.
 Limnanthemum, 182.
 Limonia, 234.
 Linociera, 357.
 Linum, 177.
 Liquidambar, 247, 394.
 Liriodendron, 421.
 Lithræa, 249; *read for* Rhus.
 Livistona, 74, 414.
 Lodoicea, 124.
 Loiseleuria, 29.
 Lolium, 151, 207, 347.
 Lonicera, 442.
 Loranthus, 3.
 Lotus, 194, 253.
 Loxopterygium, 342.
 Lucuma, 76, 268.
 Lupinus, 254.
 Lycium, 57.
 Lycoperdon, 340.
 Lycopersicum, 414.
 Lycopodium, 121.
 Lysiloma, 358.

 MACHÆRIUM, 225, 412.
 Maclura, 187, 303.
 Macrochloa, 165.
 Macrozamia, 449.

Madia, 255.
Magnolia, 255, 447.
Mahonia, 39.
Mallotus, 232.
Malpighia, 108.
Malva, 229, 259.
Mamillaria, 76.
Mammea, 261.
Mandragora, 262.
Mangifera, 263.
Manicaria, 69.
Manihot, 88, 96.
Maranta, 25.
Marasmius, 169.
Marcgravia, 225.
Marchantia, 249.
Marsdenia, 221.
Marsilea, 284.
Matisia, 115.
Mauritia, 92, 273.
Maximiliana, 226.
Medicago, 270.
Megarrhiza, 51.
Melaleuca, 56, 77, 407.
Melanorrhoea, 426.
Melhania, 162.
Melia, 42, 285.
Melanthus, 214.
Melicocca, 214.
Melilotus, 136, 271.
Melissa, 31.
Melocactus, 76, 271.
Mentha, 319, 387.
Menyanthes, 65, 182.
Merulius, 158.
Mesembryanthemum, 173, 218.
Mespilus, 271.
Mesua, 223.
Metrosideros, 7, 331, 347.
Metroxylon, 362.
Michelia, 105.
Mikania, 201.
Mimosa, 3, 216.
Mimulus, 280.
Mimusops, 139, 205.
Mirabilis, 269.
Monarda, 304, 406.
Monizia, 95.
Monstera, 275.
Moquilea, 337.
Mora, 275.
Morchella, 276.
Morinda, 4, 276.
Moronobea, 212.
Morus, 278.
Mucor, 278.
Mucorini, 185.
Mucuna, 139.
Muntingia, 78.
Murraya, 245.
Musa, 1, 164, 211, 329.

Mylitta, 61.
Myoporum, 366.
Myrica, 84, 384, 445.
Myristica, 289.
Myrospermum, 33.
Myrrhis, 109, 282.
Myrsine, 68.
Myrtus, 283.

NANDINA, 359.
Narcissus, 148, 283, 420.
Nardostachys, 387.
Narthecium, 28.
Narthex, 25.
Nasturtium, 142.
Nauclea, 275.
Nectandra, 200, 289, 370, 439.
Nelumbium, 359.
Neottopteris, 49.
Nepenthes, 327.
Nephelium, 248.
Nerium, 296.
Nicotiana, 413.
Nigella, 169.
Nipa, 287.
Nitella, 106.
Nitraria, 253, 287.
Norantea, 225.
Nostoc, 391.
Notelæa, 223.
Nuphar, 435.
Nuytsia, 177.
Nymphea, 251, 435.
Nyssa, 421.

OCHROMA, 133.
Ocymum, 399.
Odontoglossum, 302.
Oenanthe, 139, 434.
Oenocarpus, 30.
Oenothera, 168.
Oidium, 164, 422, 430.
Oldenlandia, 106.
Oldfieldia, 407.
Olea, 53, 223, 297.
Omphalobium, 449.
Oncocarpus, 223.
Oncosperma, 286.
Onobrychis, 362.
Onopordon, 135.
Onosma, 256.
Ophelia, 113.
Ophiocaryon, 381.
Ophioglossum, 5.
Ophiorrhiza, 381.
Opoidia, 188.
Opopanax, 299.
Opuntia, 76, 219, 288.
Orchis, 302, 363.
Oreodaphne, 369.
Origanum, 268.

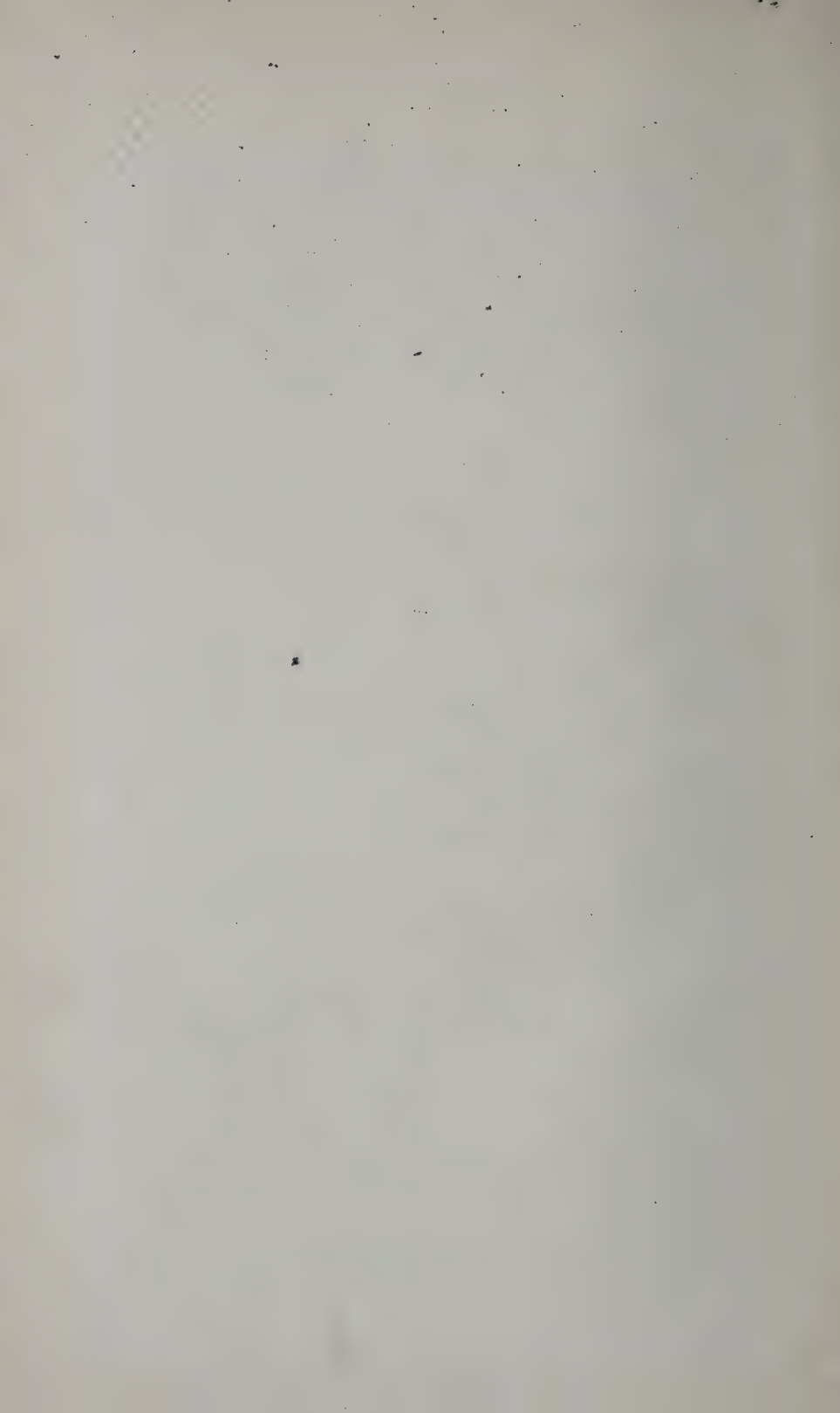
Ormosia, 42.
Ornithogalum, 27, 391.
Ornus, 26.
Orobanche, 64, 345.
Oryza, 83, 351.
Ostrya, 215, 223.
Ouvirandra, 240.
Owenia, 386.
Oxalis, 296, 385.

PACHIRA, 378.
Pachyrhizus, 444.
Pæonia, 317.
Paliurus, 115.
Panax, 193.
Pandanus, 372.
Panicum, 202, 272.
Papaver, 334.
Pappea, 439.
Papyrus, 312.
Parechites, 225.
Parinarium, 192.
Paritium, 41.
Parkia, 287.
Parkinsonia, 227.
Parmelia, 144.
Parmentiera, 84.
Paspalum, 273, 352.
Passiflora, 197, 314.
Pastinaca, 299, 313.
Paullinia, 201, 398, 412.
Pelargonium, 191.
Penea, 368.
Penicillium, 184, 431.
Pentaceros, 102.
Pentachlethra, 305.
Pentadesma, 72.
Pereskia, 76, 196.
Peronospora, 337, 422, 430.
Persea, 10, 83.
Petroselinum, 313.
Petucedanum, 137, 386.
Peziza, 200.
Phalænopsis, 302.
Phalaris, 83.
Phallus, 393.
Phaseolus, 235, 371.
Phlebodium, 78.
Phleum, 207, 412.
Phoenix, 76, 151, 306, 307.
Phormium, 178.
Photinia, 250.
Phragmites, 348.
Phyllocladus, 103, 402.
Phyllocoeryne, 229.
Phyllostachys, 438.
Phylloxera, 430.
Physalis, 441.
Physocalymma, 421.
Physostigma, 77.
Phytelephas, 224.
Phytolacca, 331, 424.

- Picea, 31, 379, 423.
 Picræna, 342.
 Pierardia, 346.
 Pimenta, 10.
 Pimpinella, 17.
 Pinguicula, 72.
 Pinus, 174, 181, 322, 372, 422, 442.
 Piper, 47, 233, 270, 317.
 Pistacia, 30, 203, 269, 325, 409.
 Pistia, 435.
 Pisum, 315.
 Pithecolobium, 383, 448.
 Pittosporum, 58, 439.
 Planera, 449.
 Platanus, 73, 111, 328.
 Platycerium, 390.
 Plocaria, 104.
 Plumbago, 242.
 Plumieria, 180.
 Poa, 207.
 Podocarpus, 234, 417, 444, 446, 447.
 Podophyllum, 270.
 Pogostemon, 314.
 Poinciana, 179.
 Poinsettia, 167.
 Polianthes, 420.
 Polyactis, 185.
 Polygala, 382.
 Polygonatum, 384.
 Polygonum, 221.
 Polypodium, 332.
 Polyporus, 158, 191, 277, 412.
 Polystichum, 78.
 Polytrichum, 277.
 Pomaderris, 130.
 Pongamia, 333.
 Populus, 27, 136, 333, 440.
 Porphyra, 242.
 Poterium, 69.
 Prangos, 338.
 Primula, 28, 140, 331, 338.
 Pringlea, 74.
 Prinos, 406, 441.
 Prionium, 309.
 Prosopis, 8, 9.
 Protea, 214, 339.
 Protococcus, 347.
 Prunus, 11, 20, 68, 240, 330, 336, 380.
 Psidium, 201.
 Psophocarpus, 194.
 Psoralea, 41, 228, 337.
 Psychotria, 222.
 Pteris, 58, 171.
 Pterocarpus, 204, 340, 356, 367.
 Pteroxylon, 383.
 Ptychosperma, 74.
 Ptychotis, 7.
 Puccinia, 214.
 Pulmonaria, 253, 305.
 Punica, 332.
 Puya, 341.
 Pyrethrum, 172, 178.
 Pyrus, 18, 20, 27, 316, 375, 439.
 QUADRIA, 29.
 Quassia, 342.
 Quercus, 133, 291, 295, 366, 440.
 Quillaja, 343.
 RAFFLESIA, 345.
 Ramalina, 301.
 Randia, 221.
 Ranunculus, 320, 434.
 Raphanus, 344.
 Raphia, 230, 307.
 Ravenala, 417.
 Reseda, 272, 437.
 Rhagodia, 363.
 Rhamnus, 65, 156, 253.
 Rheedia, 439.
 Rheum, 350.
 Rhinacanthus, 284.
 Rhipsalis, 76.
 Rhizomorpha, 185.
 Rhizophora, 264.
 Rhododendron, 177, 349.
 Rhodomenia, 159.
 Rhodorrhiza, 296.
 Rhus, 187, 249, 397, 426, 437.
 Rhynchosia, 43.
 Rhynchospermum, 225.
 Ribes, 145, 195.
 Riccia, 249.
 Richardia, 419.
 Richardsonia, 122, 222.
 Ricinus, 307.
 Rivina, 54.
 Robinia, 250, 355.
 Rocella, 90, 301.
 Rollinia, 239.
 Rosa, 353.
 Rosmarinus, 356.
 Rottlera, 232.
 Roupellia, 141.
 Rubia, 254.
 Rubus, 60, 346.
 Ruellia, 353.
 Rumex, 155, 212, 351, 385.
 Ruscus, 70.
 Ruta, 357.
 SABAL, 308, 410.
 Saccharum, 396.
 Saccolabium, 302.
 Sagittaria, 24.
 Saguerus, 307.
 Sagus, 224, 362.
 Salacia, 415.
 Salicornia, 193.
 Salisburia, 257.
 Salix, 304, 363, 439, 440, 441.
 Salsola, 193, 364.
 Salvadora, 281.
 Salvia, 112, 361.
 Sambucus, 150, 162.
 Sanguinaria, 55.
 Sanguisorba, 69.
 Sansevieria, 210.
 Santalum, 43, 342, 365.
 Sapindus, 383.
 Saponaria, 384.
 Sapota, 68, 284.
 Sarcocephalus, 316.
 Sargassum, 202.
 Sarracenia, 377.
 Sassafra, 363, 369.
 Satureia, 370.
 Sauvagesia, 212.
 Saxifraga, 44, 250.
 Schinus, 269, 275.
 Schistostegia, 277.
 Schleicheria, 237.
 Scilla, 389.
 Scirpus, 68.
 Scorzonera, 371.
 Seaforthia, 74.
 Secale, 358.
 Sechium, 113.
 Selaginella, 349.
 Semecarpus, 268.
 Sempervivum, 216.
 Senecio, 200.
 Sequoia, 261, 348.
 Serjania, 412.
 Sesamum, 193, 375.
 Sesbania, 150.
 Shepherdia, 67.
 Shorea, 363.
 Sideroxylon, 223.
 Silphium, 129.
 Simaba, 102.
 Simaruba, 342.
 Sinapsis, 280, 281.
 Sium, 379, 436.
 Smilax, 94, 113, 368, 406.
 Smyrnum, 8.
 Soja, 386.
 Solanum, 52, 85, 162, 336, 431.
 Solenostemma, 24.
 Solidago, 195.
 Sonneratia, 232.
 Sophora, 385.
 Sorghum, 63, 202, 272.
 Soymdia, 257.

- Spartium, 63, 187, 344.
 Sphæria, 186.
 Sphagnum, 277.
 Spigelia, 443.
 Spinacia, 388.
 Spiræa, 389.
 Spodiopogon, 68.
 Spondias, 213, 304.
 Stachytarpheta, 407.
 Stadtmannia, 222.
 Stanhopea, 302.
 Stapelia, 94.
 Staphylea, 53.
 Statice, 241, 411.
 Steenhammara, 305.
 Sterculia, 57, 177.
 Sticta, 253.
 Stillingia, 401.
 Stipa, 169.
 Strelitzia, 395.
 Strychnos, 119, 290, 383, 425.
 Styra, 47, 393.
 Swartzia, 310.
 Swietenia, 256.
 Symphonia, 212.
 Symphoricarpos, 383.
 Symphytum, 129.
 Symplocarpus, 380.
 Symplocos, 250.
 Syncarpia, 423.
 Syringa, 244.
 TABERNÆMONTANA, 138.
 Tacca, 105, 319.
 Tamarindus, 401.
 Tamarix, 265, 401, 402.
 Tamus, 64.
 Tanacetum, 402.
 Tanghinia, 303.
 Taraxacum, 150.
 Tarchonanthus, 178.
 Tasmannia, 319.
 Taxodium, 147.
 Taxus, 447.
 Tecoma, 58.
 Tectona, 408.
 Telopea, 434.
 Tephrosia, 220.
 Terminalia, 282.
 Testudinaria, 416.
 Tetracera, 436.
 Tetragonia, 388.
 Teucrium, 411.
 Thapsia, 25, 94, 190.
 Thea, 404.
 Thelephora, 158.
 Theobroma, 114.
 Thrinax, 410.
 Thuja, 22, 101, 367.
 Thymus, 411.
 Tilia, 41, 246.
 Tillandsia, 277.
 Tinospora, 189.
 Toluifera, 34.
 Tontelea, 415.
 Torreya, 290.
 Torrubia, 186.
 Torula, 445.
 Trachylobium, 131.
 Tradescantia, 387.
 Tragopogon, 364.
 Trapa, 111.
 Treculia, 62.
 Tribulus, 79.
 Trichosanthes, 381.
 Trichilia, 357.
 Trichomanes, 174.
 Trifolium, 121.
 Trigonella, 170.
 Tripsacum, 67.
 Tristania, 423.
 Triticum, 319, 387, 394, 438.
 Tropæolum, 83, 142.
 Tuber, 418.
 Tulipa, 420.
 Tussilago, 128.
 Typha, 68, 348.
 ULEX, 187.
 Ulmus, 163, 285.
 Ulva, 242.
 Umbilicaria, 418.
 Uncaria, 189.
 Urania, 395, 417.
 Urceola, 88.
 Urtica, 211, 285, 286.
 Usnea, 418.
 Ustilago, 380.
 Uvaria, 239.
 VACCINIUM, 48, 141, 217.
 Valeriana, 387, 425.
 Vanda, 302.
 Vanilla, 425.
 Vateria, 131.
 Vepris, 223.
 Veratrum, 209.
 Verbascum, 278.
 Verbena, 428.
 Vernonia, 235.
 Viburnum, 202.
 Vicia, 403.
 Victoria, 428.
 Vigna, 114.
 Viola, 431.
 Virgilia, 446.
 Viscum, 274.
 Vismia, 190, 275.
 Vitex, 341, 408.
 Vitis, 52, 429.
 Voandzeia, 161.
 Vochysia, 130.
 WELLINGTONIA, 261.
 Welwitschia, 437.
 Willughbeia, 88.
 Wrightia, 221, 305.
 XANTHIUM, 69.
 Xanthorrhœa, 199.
 Xanthoxylon, 188, 212, 318, 415, 446.
 Ximenia, 366.
 Xylia, 222.
 Xylomelum, 443.
 Xylopia, 202, 318.
 YUCCA, 5, 157.
 ZAMANG, 448.
 Zamia, 76, 362, 448.
 Zanthorhiza, 446.
 Zasmidium, 185.
 Zea, 257.
 Zingiber, 192.
 Zizania, 83.
 Zizyphus, 115, 229.
 Zostera, 200.
 Zygochryllum, 43.

THE END.



UNIVERSITY OF ILLINOIS-URBANA



3 0112 127322912